

SERIES

SCIENCE

The Main Book

By A Group of Supervisors



THEME ONE: Systems

Interactions of Organisms

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THEME TWO: Matter and Energy

UNIT **2**Particles in Motion

Matter in the World Around Us:

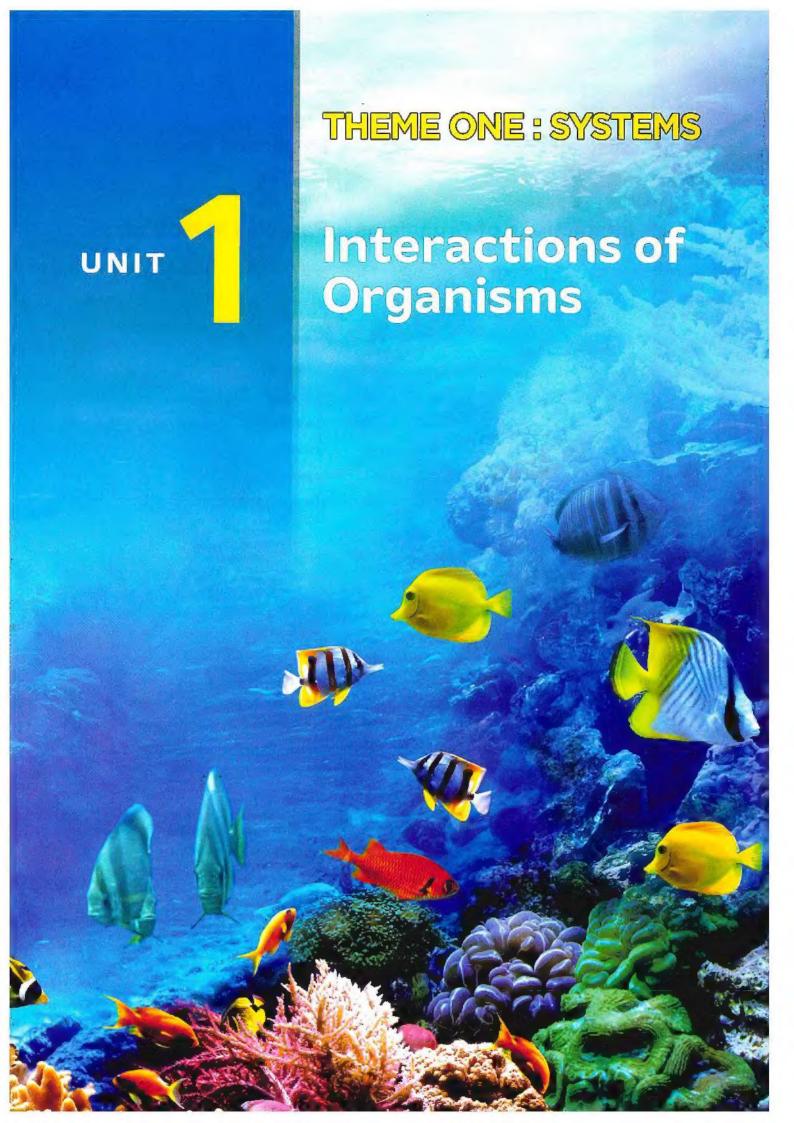
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Get Started

What I Already Know



- Plants are found everywhere around us.
- There are some basic needs that plants depend on to grow up and survive such as :
 - Air.

- Water.
- Sunlight.
- The opposite pictures show two potted plants :

Plant (A) has green leaves and grows well, while plant (B) is wilted and has yellow leaves.





Plant (A)

Plant (B)

- Plant (B) cannot grow well and die due to one or all of the following reasons :
 - It may be placed in a dark place, so it doesn't get sunlight.
 - It may not be watered regularly.
 - It may be placed in a bad aerated area, so it doesn't get enough fresh and clean air.
- In this unit, you are going to study :
 - How plants use sunlight, air and water to make their own food.
 - Types of living organisms : producers, consumers and decomposers.
 - The interaction between living organisms to get their needed energy through what is called "Food Chains" and "Food Web".

Example: The squirrel eats leaves, fruits, insects and chicks of birds to get the energy it needs.

 What happens to an ecosystem, if a food chain in this ecosystem is interrupted.



Squirrel

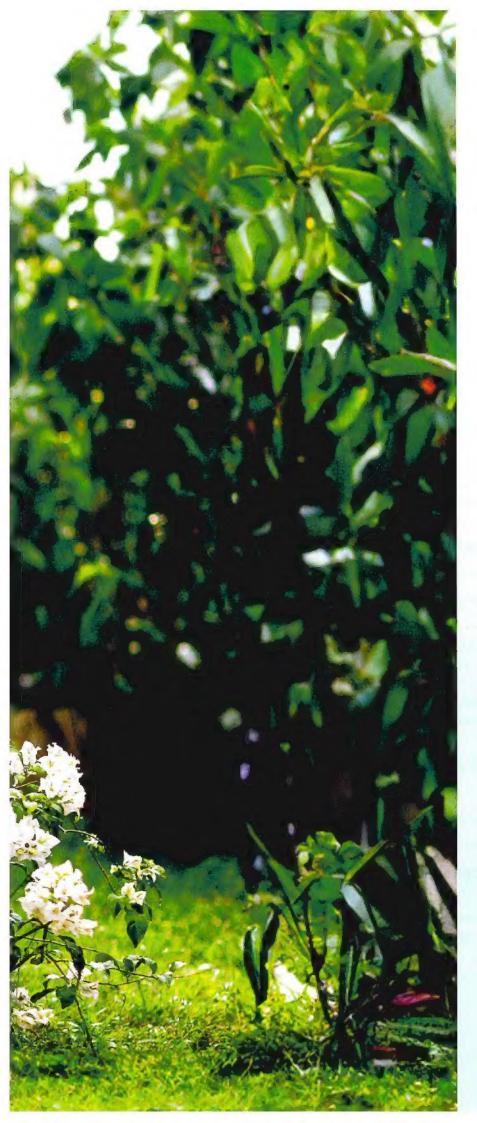
• Unit Project : "Build a Miniature Ecosystem"

At the end of this unit, you are going to build a miniature ecosystem (small ecosystem) to show how living organisms depend on other living organisms to get their food. Also, the importance of some non-living things such as air, water, soil ... etc. for the survival in an ecosystem.



Ecosystem





Learning outcomes

By the end of this concept, your child will be able to:

- · Use evidence to argue that plants use specialized structures to obtain the materials that they need to grow from Sun, air and water.
- Develop a model of how energy moves through plants.
- Develop a model of plant processes that use natural resources to complete life processes.
- Compare the structure and function of the transport system in plants with the circulatory system in humans.

Key vocabulary

- Arteries
- Photosynthesis
 Vessels
- Circulatory system
- Plant
- Xylem
- Digestive system
- Stem
- Seed dispersal
- Stomata
- Germinate
- Survive
- Glucose
- Vascular system
 Nutrients
- Phloem
- Veins

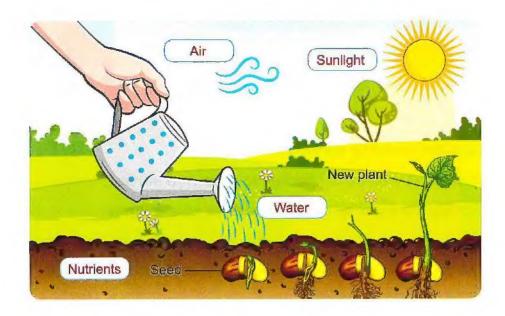


On Concept (1.1)

Lessons	Activities	What you should do with your child
	Activity 1	Explain to your child how the structures of a plant use water, air and light to perform life processes.
1	Activity 2	Discuss with your child what the plant needs to grow and survive.
	Activity 3	Discuss with your child basic and not basic plant needs for photosynthesis process.
2	Activity 4	Help your child germinate some seeds in a wet paper towel then compare their growth to the growth of the other seeds which are placed in soil.
	Activity 5	Help your child do an experiment to show the effect of sunlight on plant growth.
3	Activity 6	Discuss with your child parts of a plant.
3	Activity 7	Help your child do an experiment to observe how water and nutrients move from the roots to the leaves of a plant.
	Activity 8	Let your child compare between the plant transport system and the human circulatory system.
4	Activity 9	Discuss with your child how plants make their own food.
	Activity 10	Discuss with your child the function of flowers of plants.
	Activity 11	Help your child to think about ways of seed dispersal in nature.
5	Activity 12	Help your child to think like a scientist by answering a question about one of the main points of this concept then write his/her claim, evidence and the scientific explanation.

LESSON ONE

Activity 1 Can You Explain ?



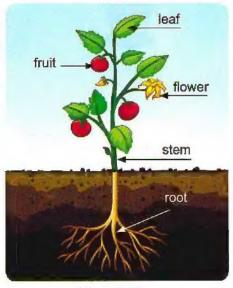
- When you observe the figure above that shows the steps of growing up a bean seed to form a new plant, you can find out what the plant needs to grow.
- · Plants need water, air, sunlight, nutrients and space to grow.

▶ How do the structures of a plant use water, air and light to perform life processes ?

- Plants consist of different parts which are roots, stem, leaves and sometimes flowers or fruits, where each part of a plant has its own function.
- Plants use these different parts to obtain their basic needs of water, air and light to make their own food.

In this concept, we will study:

- Plant basic needs.
- Parts of a plant.
- · Comparing plant and human systems.
- · Human circulatory system.
- Plant transport system.
- Plant food.
- Flowers and seeds.
- · Seed dispersal.



Plant parts

Activity 2 Tree Needs

▶ Look at the opposite picture, then put (√) or (x):

- 1. Both human and plant need food and water everyday to survive.)
- 2. Both human and plant need carbon dioxide gas to breathe.



What does a plant need to survive?

- Plants need food as well as our bodies to grow and survive.
- We must provide the plant with all its needs to able to grow.

Example: When a tree is planted, it begins to grow from a seedling into a mature tree depending on some resources such as water, air and sunlight to make its food to survive.

Check your understanding ▶ Circle the items that the plant needs to grow and survive :



Space

Meat

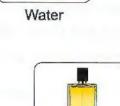


Sunlight





Аіг



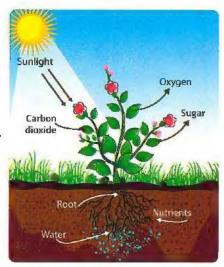
Perfume

Activity 3 What Do You Already Know About Plant Needs?

- Water and air are basic needs of plants, animals and humans.
- Humans and other animals need to eat food to gain energy and nutrients to live and grow.
- Most plants get nutrients and water from the soil and make their own food through a process known as "photosynthesis process" that takes place in the plant leaves.
- · Plants need some resources to live and grow such as :
 - Carbon dioxide gas (a gas found in the air).
 - Sunlight. Water. Nutrients from the soil.

Plants and food

- Plants make their own food which is a type of sugar that provides the plant with energy to grow.
- Plants make their food (sugar) in their leaves by means of photosynthesis process, where:
 - The roots of a plant absorb water and nutrients from the soil.
 - Water and nutrients are carried from the roots to the leaves through the stem.
- From the previous explanation, we can conclude that the plant's basic needs that enable it to make its food are:
 - Sunlight
- Water
- Air (carbon dioxide).



Photosynthesis process



Check your understanding

Classify the following items into "Basic plant need for photosynthesis" or "Not basic plant need for photosynthesis":

(Water - Sunlight - Oxygen - Sugar - A forest - Carbon dioxide)

Basic plant need for photosynthesis	Not basic plant need for photosynthesis

In the Assessment Book : Try to answer : Self-Assessment (1)

basic	
gain	4
energy	
by means	of

عن طريق

Exercises on Lesson 1

Understand

Apply

Higher Thinking Skills

ı		hoose the correct answer:			
-	1.	The of plant absorb water ar	nd nutrients from th	e soil.	(Dakahlia 2023)
		a. roots b. stems	c. leaves	d. flowers	
	2.	Humans and other animals need to	eat to get		
		a. oxygen gas.	b. energy.		
		c. carbon dioxide gas.	d. soil.		
	3.	Plants make their food by a proces	s known as		(Alex. 2023)
		a. respiration.	b. absorption.		
1		c. photosynthesis.	d. digestion.		
	4.	and are from the plant	needs that help it	make photosy	nthesis
		process.	•		(Cairo 2023)
		a. Oxygen – water	b. Sunlight – carb	on dioxide	
		c. Water – earthworms	d. Nutrients - oxy	gen	
	5.	Plants and humans are similar in s	ome of their basic	needs to surv	ive such
		as			
		•	b. water and air.		
		c. carbon dioxide and soil.	d. soil and water.		
	6.	Plants take from the air to make	te its food.		(Alex. 2024)
		a. water	b. oxygen gas		
		c. carbon dioxide gas	d. sugar		
	7.	All the following are plant basic need	eds to make its ow	n food, <u>excep</u>	<u>t</u>
		a. water. b. air.	c. sunlight.	d. rocks.	
	8.	Which of the following sentences is	wrong?		
		a. Plants need sunlight to grow.			
		b. Plant roots absorb water from th			
		c. Plants make their own food by re			
		d. Plants make their own food in th			
	9.	Water and nutrients are carried from	m the roots to the I	eaves through	
		a. stem. b. soil.	c. fruits.	d. flowers.	(Cairo 2024)
	40				
)	10.	In photosynthesis process, plant pr		et energy.	
		a. oxygen gas c. carbon dioxide	b. sugar d. water		
		G. GALDOTT GIOXIGE	u. Walei		

2 Choose from column (B) what suits it in column (A):

(A)		(B)		
1. Sunlight	a. is absorbed by the roots of	f the plant.		
2. Carbon dioxide	b. is necessary for plant's growth.			
3. Water	c. is not a basic need for plant growth.			
4. Oxygen	d. a gas which is produced during photosynthesis process.			
	e. a gas which is used by the	e. a gas which is used by the plant during photosynthesis		
	process.			
1	2	4		
Put (✓) or (X) :				
1. Plants need water	r and air only to grow.	(Menofia 2023) (
2. Stem of the plan	absorbs water from the soil.	(
3. Human, animals	and plants need food and wat	ter to survive. (
4. Plants use the er	ergy of the sunlight to make t	their own food. (
5. Carbon dioxide g	as is one of the plant needs th	hat helps it to grow and		
survive.		(
6. Photosynthesis p	rocess takes place in the plar	nt roots. (Cairo 2024) (
7. The plant can ma	ke its own food in the absenc	ce of water. (
Complete the follo	wing sentences :	•		
_	stem, and			
	and , from the			
	own food through	_		
in their		·		
4. The stem carries	water and nutrients from the	to the		
of the plant.		(Luxor 202		
5. The plants use th	e light of to make th	neir own food.		
6. The food of plant photosynthesis p	is a type of which is rocess.	s made in their by		
Soil is the source own food.	of and nutrients wh	ich the plant needs to make its		
Write the scientific	term of each of the following	g :		
1. A gas taken from	the air by leaves to help the p	plant to make its		
own food.		(Gharbia 2024) (
2. A liquid substance	e that plants, animals and hur	nan need to survive. (

Unit 1 | Concept 1

i	3. A part of the plant that carries water and nutrients from the roo	ots to
	the leaves. (Cairo	2023) ()
•	4. The process by which the plant can make its own food.	()
ļ	5. The gas which is released from plants during photosynthesis	
	process. (Damietta	2023) ()
ļ	6. The source of energy that the plant uses to make photosynthe	sis
	process.	()
6	Cross out the odd word :	
Î	1. Carbon dioxide gas - Water - Oxygen gas - Nutrients. (Giza	2023) ()
	2. Roots – Stems – Leaves – Sunlight.	()
7	Give reasons for :	
	Roots have important role in photosynthesis process of plants.	. (Sohag 2024)
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Ì	Photosynthesis process is important for plants to survive.	(Cairo 2023)
8	What happens if?	
Ĭ	1. Plants have no stems.	
	Plants can't get carbon dioxide gas from air.	***************************************
		1.11
	3. We put a green plant in a dark room for many days.	(Cairo 2024)
9	Adam planted a flowering plant in a pot, He put this plant in a	soil rich in
•	nutrients and water it everyday, he used to cover this pot every	
	carton box to hide it from his brother, after many days, do you	think that this
	plant will survive ? And why ?	
	a. Yes, because it has nutrients and water.	
	b. No, because it needs air and light.	A SE SE
	c. No, because plant doesn't need water and soil.	
	d. Yes, because it can survive without sunlight.	
1		

LESSON TWO

Activity 4 Do Plants Need Soil 2

▶ Look at the opposite picture, then put (√) or (x):

- Plants need air and sunlight only to grow.
- If the plant is not watered for a long time, it will die.



Do plants need soil to grow?

To know whether plants need soil as a basic need for growth or not, we will germinate some seeds in a wet paper towel and measure their growth, and then compare their growth to the growth of the other seeds which are placed in the soil.

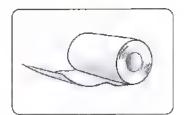
Note

Germination means that the plant sprouts and begins to grow from a seed.

Tools



Plastic cup contains soil



Paper towels



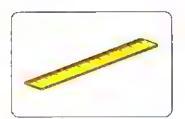
Six bean seeds (Fava beans)



Plastic plate



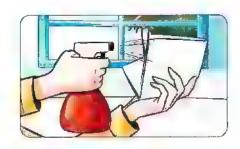
Water



Metric ruler

Steps

1. Use the water to wet the paper towel.



يقيس نمو ينيت

fava beans metric ruler

الفول مسطرة متربة

- 2. Place three seeds in the top half of the paper towel and fold the bottom half of the towel up so that it covers the seeds, then place the paper towel inside the plastic plate.
- 3. Plant the other three seeds in the cup that contains soil, then water the seeds.
- **4.** Place the plate and the cup in a place where they can get sunlight.
- Check the growth of seeds over the next several days. Wet the paper towel and water the soil as needed.
- Measure the growth of each seed using the metric ruler.











Observations

 The initial growth of the seeds placed in the paper towel is similar to that of the seeds planted in the soil.

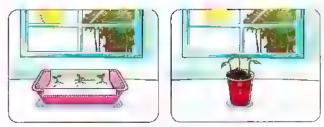




After 7 days

22

 The seeds grown without soil would not grow as quickly as the seeds in the soil.



After 14 days

Conclusions

- In the presence of water, seeds can grow (germinate) without soil.
- In the presence of water and sunlight, plants can grow without soil for a while, but finally they need soil that provides plants with nutrients that allow plants to grow well.

Give a reason for :

Plants can grow without soil for a while, but finally they need soil.

Because the soil provides plants with nutrients that allow plants to grow well.

Check your understanding

▶ Put (√) or (x):

- 1. The presence of soil is necessary for seeds in their initial growth. ()
- 2. When bean seeds grown in a wet paper towel, they need soilafter a while.()

Activity 5 Sunlight A Basic Need

Plants make their own food through photosynthesis process.

Photosynthesis process:

It is the process through which the green parts of plants (leaves) absorb sunlight to make their own food.

How can plants make their own food through photosynthesis process?

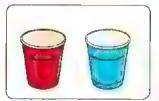
- 1. Green plants use their leaves to collect sunlight and carbon dioxide from the air.
- 2. Plant roots absorb water from the soil.
- 3. Inside the green plants, sunlight allows carbon dioxide to combine with water to produce :
 - Oxygen which is released in the air to help living organisms breathe.
 - · Sugar (the food of plant) which gives the plant the energy it needs to grow.

So, photosynthesis process can be represented as follows:

Sunlight + Carbon dioxide + Water — → Oxygen + Sugar

Now, we will do an experiment to show the effect of sunlight on plant growth:

Tools



Two plastic cups



Two bean seeds



Soil



Water

Steps

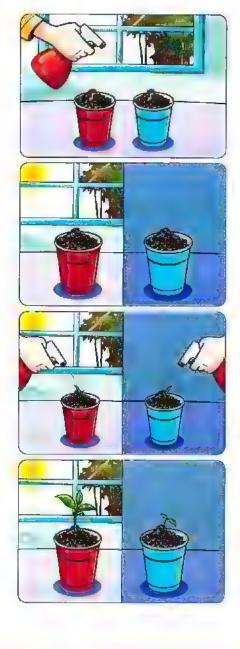
 Add the soil to the two cups, then put the bean seeds on the soil, where each cup contains one seed and cover the seeds with about 2 centimeters of soil.



يتنفس

Add the same amount of water to each cup to moisten the soil.

- Put the red cup facing the sunlight and the blue cup in a dark place.
- Water both plants regularly and observe them along two weeks.



Observations

After two weeks, we observe that :

- The plant in the red cup grew taller than the plant in the blue cup.
- The plant in the red cup has four leaves with dark green color, while the plant in the blue cup has two small leaves with pale green (yellow) color.

Conclusions

- Sunlight is a basic need for the plants like water and air.
- Sunlight is important to plant growth, because plants use sunlight to make their own food, so the plant without sunlight does not grow well because it had less food.

Check your understanding

▶ Put (√) or (x):

1. In the presence of sunlight, plants can make their own food.

In the Assessment Book :
Try to answer .
Self-Assessment 2

Exercises on Lesson 2

Understand

Apply

Higher Thinking Skills

1	Choose the correct answer:				
	1. When the plant seed begins to grow a called	and makes spro	uts, this process is		
	a. respiration. b. germination. c.	absorption.	d. reproduction.		
+	2. If we put a bean seed in a, it m	ay germinate.			
	a. dry paper towel b.	wet paper towe			
	c. plastic plate d.	dry soil			
	 In the presence of water, seeds can go of growth without the need of 	germinate at the	beginning		
	a. soil. b. rocks. c.	insects.	d. dry paper towel.		
	4. Sunlight and carbon dioxide gas are colar roots b. stems c.		to make its own	foo	d.
•	5. The plant produces through ph	otosynthesis pro	cess that gives it the		
	needed energy to grow.		(Cairo	202	(3)
	a. oxygen gas b.	water			
	c. carbon dioxide gas d.	sugar			
•	6. Without, the plants can't grow v	well.	(Suez	202	(3)
	a. insects b. rocks c.	sunlight	d. moonlight		
1	7. The roots of a plant absorb fror	m the soil to help	it grow.		
	a. oxygen gas b.	carbon dioxide	gas		
	c. sugar d.	water			
2	Put (✓) or (X) :			_	
0	1. At the beginning of germinating some	e bean seeds, the	ey can grow		
	without soil and water.			()
	2. All seeds need soil in its initial growth	1.		()
	3. After many days, the growth of plant's	s seeds in a pot	containing soil is		
	similar to the growth of plant's seeds	in a wet paper to	wel.	()
	4. A green plant can grow well if it is place	ced in a dark roo	m for many days.		
			(Giza 2023)	()
	5. Leaves of plants collect sunlight and	carbon dioxide g	as from air.	()
•	6. When the plant makes photosynthesis	s process, its lea	ves become weak		
	and vellow.				1

	 7. Water and carbon dioxide are absorbed by plant's roots to help the to grow. 	plant	()
E	Correct the underlined words :			_
	1. Respiration process helps the plant to make its own food.	(,)
	2. Oxygen gas is absorbed by plant's leaves to make photosynthesis			
	process. (Beni Suef 2023)) (********)
	3. When a plant is placed in sunlight, its leaves become pale green.	(400444044)
	4. Plant's leaves absorb water and nutrients from the soil.	(********)
4	Write the scientific term of each of the following:			
•	1. The process by which plants make their own food using the			
	energy of sunlight. (Aswan 2023)	()
1	2. Parts of the plant where sunlight allows carbon dioxide to combine			
	with water during photosynthesis process.	()
1	 3. A gas produced during photosynthesis process and it is needed for 			
	respiration of living organisms.	(,)
	 4. A substance that is produced from the plant during photosynthesis process and provides it with its needed energy. 	()
	5 Complete the following sentences:			_
	1. In photosynthesis process, green plant gets from air to m food and produces that helps us to breathe.	iake it	s owl	า
	2. Inside the green plant, sunlight allows carbon dioxide to combine v	vith	(#18551451	
	that is absorbed from the soil by plant's		ira 201	
	3. The sugar that is produced from photosynthesis process provides with it needs to grow.	the pla	ant	
	4. The presence of and air is very important for grow.	plants	to	
	Give a reason for :			
	Green plants can make their own food.)))) vn
	What happens if?			
	1. We put a seed of bean in wet soil for many days.	(Gi	za 202	23)
	***************************************		********	

swer:

1. The seeds in grow faster than those in

Figure (A)

2. Seeds in figure B should be transfered into to complete its growth.

Figure (B)

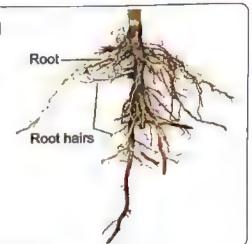
LESSON THREE

Activity 6 Parts of A plant

- ▶ Put (√) or (x):
 - 1. The main parts of the plants are roots, stems, leaves and soil.
 - 2. Each part of the plant has its own function. ()
 - In this activity, we will study different plant parts in details.

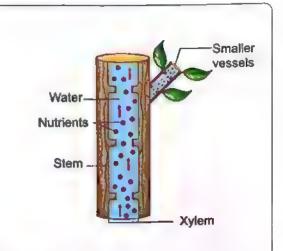
Roots[®]

- Plant roots have hairlike features (structures) called root hairs that increase the amount of absorbed water and nutrients that the plant needs from the soil.
- · Functions of the plant roots:
 - Roots fix (anchor) the plant in the soil.
 - Roots absorb (draw) water and nutrients from the soil to the plant.



Stems.

- Water and nutrients move up the plant's stem through tubes or vessels called xylem.
- Smaller vessels of xylem connect the stem to the leaves.
- Functions of the plant stem :
- Stem transports water and nutrients from the roots to the rest of the plant through xylem.
- Stem supports leaves and flowers of the plant.



features	root hairs بدورات	الشعيرات الجلرية	anchor	يثبت
draw	absorb	يمتص	increase	پزید
transport	support ينقل	beat	tubes	أنابيب
vessels	connect الوعية	يريط	xylem	نسيج الخشب

▶ There are many forms of stems :

Wood stem:

 Some plants have wood stems, such as tree trunks and shrubs.



Upright stem:

 Most flowers have upright stems.



Forms of stems

Climb stem:

 Some plants have climb stems, such as vines (grapes).



Tuber stem:

 Some stems extend underground and they are called tubers, such as potato plant.



Runner stem:

 Some stems run along the ground to help form new plants and they are called runners.



ساق متسلقة

Stomata

Leaves

- They contain chlorophyll, which gives them their green color.
- · Function of the chlorophyll:
 - Chlorophyll captures (absorbs) energy from the sunlight which allows carbon dioxide to combine with water to make food for the plant.
- The air that plant needs move into the leaves through tiny openings called stomata.

Stomata:

They are pores on the surface of plant's leaves that allow gases to move into and out of the plant.

- · Function of the plant leaves :
 - Leaves make food for the plant through photosynthesis process.



Narrow leaves (look like needles) such as pine trees.



Flat and wide leaves.



♥ Note

Plant's leaves get their needs of water and nutrients from the soil with the help of :

- Plant's roots.
- Xylem in the plant's stem.
- Smaller vessels of xylem connect the stem to the leaves.

Photosynthesis process

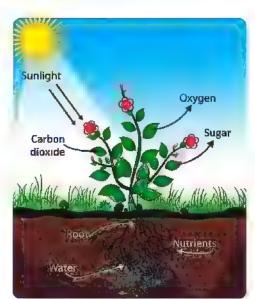
How does photosynthesis process occur in plant leaves?

Chlorophyll absorbs energy from sunlight.

Green leaves use the light energy from the Sun to combine the carbon dioxide from the air with water.

Leaves manufacture (produce):

- Nutrients (such as sugars, starches, fats and proteins) that the plant needs to survive.
- Oxygen gas that animals and people need to breathe.



As the photosynthesis process is completed inside the leaves, there are tubes called phloem that transport the food materials from the leaves to the other parts of the plant.

Give a reason for :

The life on Earth without plants would be impossible.

Because during photosynthesis process plants produce oxygen gas that animals and people need to breathe.

Check your understanding

► Choose from column (B) what suits it in column (A):

(A)	(B)
1, Stems	a. make food for the plant.
2. Roots	b. gives leaves their green color.
3. Leaves	c. support leaves and flowers of the plant.
4. Chlorophyll	d. fix the plant in the soil.

manufacture phloem

starches يصنع impossible fats النشويات

لدهون

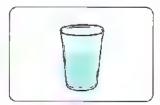
Activity 7 Up the Stem

In this activity, we will observe how the stem transports water and nutrients from the roots to all the plant parts (leaves and flowers) through xylem vessels.

Tools



Celery stalk



Glass cup containing water



Food coloring



Scissors

Steps

- Fill the cup with water, then add some drops of food coloring to the water.
- Use the scissors to cut about 2 cm off the bottom of the stalk and place it in the cup of water.
- Leave the stalk in the water cup until the next day.
- Cut across the celery stalk, about 5 cm up from the bottom and observe the xylem vessels inside the stalk.





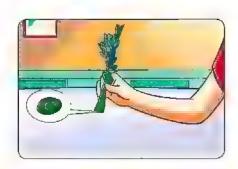




celery stalk ساق کرفس drops قطرات food coloring ساق کرفس

Observations

- The color of xylem will be turned into the same color of the water in the cup.
- Also, the color of leaves of celery will be turned into the same color of the water in the cup.



Conclusion

Xylem vessels transport water and nutrients from the plant roots up to its leaves and flowers through the stem.



Check your understanding

▶ Put (√) or (x):

- 1. Water is transported through the xylem in the plant's stem and leaves. ()
- 2. Xylem helps carry water upward the plant. ()

In the Assessment Book:

Try to answer: Self-Assessment (3)

Exercises on Lesson 3

Understand
 Apply

Higher Thinking Skills

	C	hoose the correc	t answer :			
	1.	The plant's	anchor it in the s	oil.		
		a. leaves	b. stems	c. roots	d. flowers	
1	2.	There are	in the plant's roots	that help the plan	t to get more wa	ater and
		nutrients.				(Cairo 2024)
		a. vessels	b. root hairs	c. stomata	d. flowers	
	3.	The tubes that a stem are called	re responsible for	moving water and	nutrients up the	plant's
		a. roots.	b. xylem.	c. leaves.	d. flowers.	
)	4.	,plant has	climb stem.		(0	Sharbia 2023)
		a. Potato	b. Tomato	c. Vine	d. Pine	
1	5.	The kind of stem	s that extend unde	erground are called	d stems.	(Cairo 2024)
		a. climb	b. tuber	c. runner	d. wood	
ŀ	6.	Potato plant has	stem.			(Cairo 2024)
		a. upright	b. climb	c. tuber	d. runner	
	7.	Stomata are pres	sent on plant's	to allow air to pa	ss through them	. (Giza 2024)
		a. roots	b. stems	c. leaves	d. flowers	
1	8.	can make	their own food.		(Sout	h Sinai 2023)
		a. Plants only		b. Animals only		
		c. Humans only		d. Plants and som	ne animals	
	9.	tree has n	arrow leaves.			
		a. Potato	b. Pine	c. Acacia	d. Grapes	
1	0.	The green plants	s can make their o	wn food through		
		a. roots.	b. stems.	c. leaves.	d. flowers.	
1	1.	help the pl	ant's leaves to get	water and nutrien	ts from the soil.	
		a. Roots only		b. Xylem only		
		c. Roots and xyle	em	d. Xylem and ston	nata	
1	2.	All the following except	parts are importan	t for plants to mak	e photosynthesi	s process,
		a. roots.		b. leaves.		
		c. stems.		d. flowers.		

13. The green color of	plant's leaves is due to the presence of		
a. xylem. b.	phloem. c. chlorophyli. d. stomata.		
4. Food materials are through	transported from the leaves to other parts of the plant (Cairo 202		
a. xylem. b.	phloem. c. chlorophyll. d. stomata.		
I5. Animals and huma	ns need to breathe.		
a. oxygen gasc. water vapor	b. carbon dioxide gas d. sugar		
 Green plants produ process, except 	uce all the following substances during photosynthesis		
a. oxygen gas.	b. carborn dioxide gas.		
c. starches.	d. fats.		
Chanca from column	(P) what suits it in column (A):		
①	(B) what suits it in column (A):		
(A)	(B)		
1. Pine trees	a. have climb stems.		
2. Potato plants	b. have runner stems.		
3. Vines	c. have tuber stems.		
4. Tree trunks and	d. have wood stems.		
shrubs	e. have needles leaves.		
2			
(A)	(B)		
1. Roots	a. allow gases to come in and out of the plant.		
2. Stems	b. collect sunlight and carbon dioxide gas which combines		
3. Leaves	with water to help the plant to make its own food.		
4. Xylem 5. Stomata	c. tubes or vessels that move water and nutrients up the plant's stem.		
J. Giornala	d. absorb water and nutrients from the soil.		
	e. transport nutrients and water from the roots to all parts		
	of the plant.		

	3 P	ut (🗸) or (X) :			
1	1.	. The plant is fixed in the soil by the help of its roots. (Cair	o 2023) ()
(2.	. Plant's stem has hairs that absorb oxygen gas from the air. (Damiett	a 2023) ()
•	3.	. Xylem helps the plant to absorb water from the soil.		()
•	4.	. Xylem is important for plants to transfer water from plant's roots to			
		leaves. (Dakahli	a 2023) ()
1	5.	. A tree trunk is a type of runner stems.		()
	6.	. Potato plants have tuber stems. (Cair	ro 2024) ()
	7.	. Vines have a kind of stems called climb stems.		()
-	8.	. The leaves of pine trees are flat and wide.		()
1	9.	Phloem transports food materials from the leaves to other parts of			
		the plant. (Giz	a 2023,) ()
•	10.	. Photosynthesis process produces carbon dioxide gas that helps ani	imals		
		and humans to breathe.		()
	11.	During photosynthesis process, plant absorbs carbon dioxide gas			
		from air through stomata.		()
	12.	There are tiny holes opening on the surface of stem that allow gase	S		
		to pass into the plant.		()
ا		Water and nutrients reach the plant's leaves with the help of roots o	nly.	()
ا		Plants and humans need water and air to live.		()
i		Plants need sunlight, oxygen gas and water to make its own food.		()
ا	16.	During photosynthesis process, the plant makes sugars, starches,			
		proteins and fats that help it to survive.		()
ĺ	17.	Chlorophyll helps the plant leaves to absorb sunlight to make			
	40	photosynthesis process.		()
1	18.	. Plants and humans are similar in the way of getting food.		()
4	Co	orrect the underlined words:			
ا	1.	The plant can absorb more water and nutrients from the soil			
		by the help of xylem that are found in the roots.	(*******)
	2.	There are smaller vessels of xylem that connect the root to			
		the leaves.	()
	3.	Potato plant has runner stem of xylem that extends underground.	()
	4.	The stems that run along the ground are called tuber stems	()

	5. Most flowers have wood stems.	()
	6. Stomata allow water to move into and out of the plant.	()
	7. Chlorophyll in plant's roots absorbs energy from the sunlight.	()
	8. Animals and people can't live without carbon dioxide gas to breat	he.
		()
	9. Xylem tubes transport food materials from the leaves to other part	rts
	of the plant.	()
C	Write the scientific term of each of the following :	
	A part of the plant that anchors it in the soil.	()
	2. Small structures in the plant's roots that increase the absorption	
	of water and nutrients from the soil.	()
	3. A part of the plant that supports its leaves and flowers.	()
	4. Vessels in plant through which water and nutrients move up from	
	roots to leaves.	()
4	5. The kind of plant's stem in vines.	()
4	6. The stems that run along the ground.	()
	7. A plant that has a tuber stem.	()
•	8. Narrow holes spread on the surface of plant's leaves that allow	
	gases to move into and out of the plant. (Alex. 202	24) ()
	9. It is found in plant's leaves that gives them green color and absor	rbs
	energy from the sunlight. (Alex. 202	23) ()
	10. Tubes in the plant that transport food materials from the leaves	
	to other parts of the plant.	()
	11. The gas that the plant needs to make photosynthesis process.	()
[Complete the following sentences :	
	1. Plant's roots the plant in the soil and absorb	and water from
	the soil.	
•	The presence of in plant's roots help it to absorb more and nutrients from the soil.	
•	3. There are vessels calledin the plant that transport water nutrients from plant's stem to its leaves.	er and
•	4. There are many kinds of stems on plants like stem in vi stem in potato.	ines and

•	5.	Shrubs have stems, while most flowers have	stems.
•	6.	The stems that run along the ground are called	
•	7.	There are tiny holes on the plant's leaves called that allo move into and out of the plant.	ow gases to (Gharbia 2023)
į	8.	Pine trees have leaves that look like needles.	(analia zozo)
		Plant's leaves during photosynthesis process produce	starchae fate
Ì	J.	and that the plant needs to survive.	otalones, lats
	10	Food materials that are produced by process are transp	arted from
Ì	10.	the leaves to the other parts of the plant through tubes called	
	11		
	11.	The green color of plant's leaves is due to the presence of	
		absorbs energy from	(Cairo 2024)
7	G	ive reasons for :	
	1.	The presence of hairlike structures in plant's roots.	
		· · · · · · · · · · · · · · · · · · ·	
Į	2.	Xylem vessels are important for the plant.	(Giza 2023)
4	3.	The presence of stomata on the surface of plant's leaves.	
			4.4.4
		,	
-	4.	Chlorophyll has an important role in photosynthesis process.	(Cairo 2023)

1	5.	There is no life on Earth in the absence of plants.	

۶	W	hat happens if?	
-		The plant doesn't have roots.	
	1.	The plant doesn't have roots.	
I	2	Stomata of a plant got aloged for a long time	
	۷.	Stomata of a plant get closed for a long time.	
	3	Plant's leaves don't contain chlorophyll	(Daminta 2022)
	٥.	Plant's leaves don't contain chlorophyll.	(Damietta 2023)
	А	The plant stone making photocynthesis process for several days	***************************************
	4.	The plant stops making photosynthesis process for several days.	

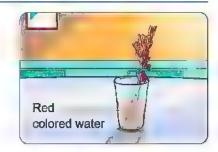
9 Complete the following comparison using these words:

(food - xylem - soil - flowers - water - photosynthesis - leaves - nutrients)

Point of comparison	Roots	Stems	Leaves
Function :	- They fix the plant in the(1)	- They transport water and nutrients to the plant leaves through(4) They support(5) and(6) of the plant.	- They make(7) for the plant through(8) process.

10 Look at the opposite figure, then answer:

- 1. The color of leaves of celery will be
- 2. Water is transported through that connect the stem to the leaves.



LESSON FOUR

Activity 8 Comparing Plant and Human Systems

▶ Put (√) or (x):

- 1. Plant needs water and air like human to survive. ()
- 2. Plant doesn't need energy like human to grow. ()

Need for energy

 Both plants and humans need energy and gases from the air to survive and grow as shown in the following diagrams:

Get the energy needed

Plants Humans - They can manufacture their own food - They must eat food throughout the day

- They can manufacture their own food (glucose sugar) to get energy through photosynthesis process.
- The digestive system digests food into glucose and nutrients.
 Then, these nutrients are absorbed into

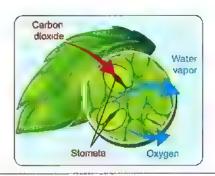
to get energy, where:

 Then, these nutrients are absorbed into the blood.

Get the gases needed

 Air enters the plants through stomata in the leaves.

Plants



 Air enters the human body through the nose and mouth then to lungs, where oxygen is absorbed and transfer to the

Humans

blood.



Now, we will determine how human circulatory system is like plant transport system.

Human circulatory system

It is a system that transports oxygen and nutrients through the blood to all the body cells (parts).

Its structure:

- It consists of:
 - · Heart.

- Blood vessels (tubes).
- · Blood.
- The human circulatory system has three different types of blood vessels which are :
 - · Arteries.

Veins.

· Blood capillaries.

Heart

- It consists of four chambers which are two atria and two ventricles.
- It pumps the blood to all the body parts.
- It receives the blood again from all the body parts.

Arteries

They carry blood rich in oxygen and nutrients (glucose) from the heart to all the body cells, so the body can survive.

Veins

They return the blood that carries carbon dioxide and a very small amount of nutrients and oxygen back to the heart, then to the lungs where the blood gets rid of carbon dioxide and carries oxygen again.



They are tiny blood vessels that connect arteries to veins.





Blood is the fluid that moves in only one direction in the human's arteries or veins.

circulatory system transport veins ventricles الجهاز الدوري ينقَلُ أوردة

blood vessels arteries cells

أوعية دموية شرايين blood capillaries pump atria

شعيرات دموية يضخ أذنتان

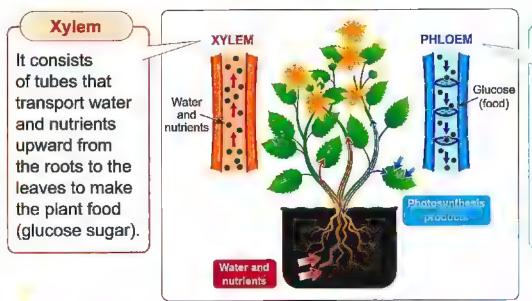
Plant transport system (Plant vascular system)

It is a system of vessels (tubes) that transports water, nutrients and plant food (glucose) between the plant parts.

Its structure:

- It consists of :
 - Xylem.

· Phloem.



Phloem

It consists
of tubes that
transport the
produced
glucose sugar
from the leaves
to all other
parts of the
plant to grow.

Note

The transport system in plants has one-way vessels that move important substances between the parts of the plant.

- From the previous explanation, we can conclude the similarities between the transport system in plants and circulatory system in humans, which are:
 - Both have vessels to transport water, nutrients and gases.
 - Both have one-way vessels (tubes).

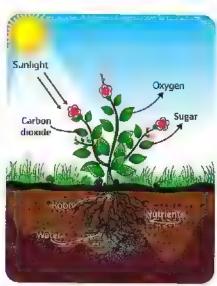
Check your understanding

	_			
Danie .	1.1	0.10	161	
Put	(V)	OI .	しみり	

- 1. Both plants and humans must take in gases from the air.
- 2. Veins carry blood rich in oxygen and nutrients. ()
- 3. Phloem tubes carry water to leaves. ()
- 4. Vessels in plants and humans are one-way vessels. ()

Activity 9 Plant Food

- Plants depend on carbon dioxide released by animals to make their own food during photosynthesis process.
- Also, animals depend on oxygen released by plants to breathe.
- We can explain the steps of photosynthesis process in plants to make their food in the following diagram:
- Plants have chlorophyll in the leaves that absorbs light energy from the Sun.
- Plants have stomata in the leaves to allow carbon dioxide enters the plant.
- Plants have xylem vessels that transport water and nutrients from the root and move them to other parts of the plant.
 - In plant's leaves, sunlight helps water combine with carbon dioxide to make glucose sugar which is used by plant cells for food.
 - Phloem moves glucose from the leaves to the other. parts of the plant as a source of energy to live and grow.



Photosynthesis process

During photosynthesis process, the plant also produces oxygen and water vapor which are released into the air.



During photosynthesis process, light energy of the Sun is transformed into chemical energy that is found in glucose.

Check your understanding

Complete the following sentences using these words:

(stomata – light – chlorophyll – chemical)

- 1. Plants have in their leaves to absorb sunlight.
- 2. Plants havein their leaves to allow carbon dioxide enters the plant.
- 3. During photosynthesis process, energy is transformed into energy.

Activity 10 Flowers and Seeds

Reproduction of plants

- Plants use the food they make to produce flowers which are responsible for reproduction.
- Flowers have different shapes, sizes and colors, where :
 - Some plants have large colorful flowers.
 - Some other plants, such as grasses have very small flowers and some flowers are not very colorful.



They are the reproductive parts of many plants.

Function of flowers:

They produce seeds that help the plant to reproduce.

Plant reproduction:

It is the process of making new plants.

Notes

- 1. When seeds receive air, water and suitable temperature, they can grow into a new plant.
- 2. In the sunflower, the seeds are the small dark-colored objects in the center of this flower.



Check your understanding

▶ Put (√) or (x):

- 1. In many plants, flowers are responsible for reproduction.
- 2. When seeds receive air and suitable temperature only, they grow into a new plant.

in the	Asse	ssmei	nt Bo	ook :
Try to	answ	er:		
Self-A	ssessn	nent (4)	

تكاثري reproduction التكاثر temperature

Exercises on Lesson 4

Understand

O Apply

Higher Thinking Skills

1	C	hoose the correc	t answer :			
•	1.	The human syst	tem that moves blo	od through the bo	dy is called	system.
		a. digestive	b. respiratory	c. circulatory	d. nervous	
•	2	. Air enters the h	uman body throug	h the		
		a. nose only.		b. mouth only.		
		c. nose and mou	uth.	d. mouth and stor	mach.	
+	3.	The human circ	ulatory system con	sists of		
		a. lungs, heart a	ind blood.	b. heart, blood ve	ssels and blood.	
		c. blood vessels	and stomach.	d. heart and pand	reas.	
•	4.		d which is rich in o	xygen and glucos	e from the heart	to the
		body cells.			(Da	ikahlia 2023)
		a. Arteries		b. Veins		
		c. Lungs and ve		d. Brain and veins		
İ	5.	Blood rich in car	bon dioxide gas re	turns back to the h	_	
		a artarias	h voice	- 1	·	noufia 2024)
		a. arteries.	b. veins.	_	d. xylem.	
Î	б.		plants consists of to			through it.
	_	a. Digestive	_	c. Transport		
Ī	1.		human circulatory			
			nd two ventricles. two atria.			
	0					. 4
Ĭ	Ö.	through	s transported from	the leaves to othe		nt Alex. 2023)
		a. xylem.	b. phloem.	c. roots.	d. stems.	116X. 2023)
	q	•	es allow air to ente			(Giza 2023)
	٥.	a. Xylem	b. Phloem	c. Stomata	d. Chlorophyll	(GIZA 2023)
	n		, light energy is co			
Ĭ	١٠.	photosynthesis		iiveited iito		mietta 2023)
		a. sound	b. electric	c. chemical	d. kinetic	
	11.	Plants can produ	uce new seeds by .			
			b. leaves.		d flowers	

•	12.	The reproductiv	e parts of many	plants are called			
		a. veins.	b. roots.	c. leaves.	d. flowers.		
	13.	In, its see	eds are small da	rk-colored objects	in the center of this t	lower.	
		a. pine tree	b. sunflower	c. potato plant	d. celery		
2	P	ut (🗸) or (X) :					
•	1.	Air enters plants	s through their ro	oots.	(Giza 20	024) ()
	2.	Living organism	s need food and	gases from the ai	r to survive and grow	<i>t.</i> ()
•	3.	Human circulate	ory system consi	sts of the heart an	d the lungs.	()
	4.			irculatory system t	hat carry blood rich i		
		carbon dioxide			(Sharkia 20)23) ()
İ					s of two chambers.	()
İ	6.		•	orted from the hea	rt to the body cells	1	١
	7	through arteries		trients from the ro	ote to the leaves	/	, \
Ĭ						,	,
Ĭ	Ο.	photosynthesis	-	s produced from p	iants during	()
	9.			plants are flowers.	(Dakahlia 20)24) (Ó
		Plant's seeds a	•		(Sohag 20)
	_						
3		orrect the under					
	1.	Human circulate	ory system consi	ists of the <u>lungs,</u> bl	ood vessels and blo	od.	\
	2	Proin numns ble	and to all the hav	du parta)
		Brain pumps blo			io wave veccels (١.
		Veins carry bloc			<u>ro-ways</u> vessels. (_
				light energy is tran)
	J.	sound energy.	itilesis process,	light energy is train)
	6.		acose durina res	piration process th	*		,
		with energy.	<u> </u>			\$-4-4-6-14-15-15-15-15-15-15-15-15-15-15-15-15-15-)
	7.	Flowers of plant	s produce <u>root h</u>	airs that help the pl	ant to reproduce. (.)
4	\A	rite the scientifi	ic term of each o	of the following:			
					from the plant roots	gu	
			m to its leaves a)

P	2.	The human body system that consists of the heart, blood vessels a	nd blood.
			()
•	3.	It pumps the blood to all the body parts and receives it again.	()
+	4.	Tiny blood vessels that connect arteries to veins.	()
	5.	A system of tubes through which water, nutrients and plant food are carried all over the plant. (Cairo 2024)	()
•	6.	Blood vessels carry blood from the heart to all the body parts.	()
	7.	Blood vessels carry blood from the body parts and return it back to the heart.	()
	8.	A type of sugar produced by the plant during photosynthesis proces	•
		,	()
	9.	Vessels move glucose from the leaves to other parts of the plant.	()
† 1	0.	Parts of the plant that are responsible for reproduction.	()
1	1.	The process of producing new plants.	()
5	C	omplete the following sentences :	
		Plants make their food in the form of sugar during photosy process. Air enters plants through stomata on their , while it enters	
		body through and	the naman
Ì	3.	Human circulatory system consists of, , and	****
†	4.	Arteries carry blood rich in and from the heart to	all the
		body parts.	Gharbia 2024)
	5.	The nutrients and oxygen are transported through the human blood cells by the system.	to the body (Alex. 2024)
•	6.	The heart in the human circulatory system consists of and	
•	7.	The plant makes sugar in its during photosynthesis proces	SS.
	8.	Transport system in the plant consists of two types of vessels which and and	are
		Arteries carry oxygen and nutrients from the to all the bod while in plant's stem carries water from the to the	
 1	0.	In plant's leaves, energy is converted into energ	y during
		photosynthesis process. (Menofia 2023)
1	1.	Flowers of the plant produce that help it to	
1	2.	There are three types of vessels in the human circulatory system will	nich are
		and	(Caim 2023)

. Xylem in plant is a one-way vessel.	
2. Flowers are important parts for the plan	nt.
What happens if?	
l. Plants can't produce glucose sugar dui	ring photosynthesis process.
2. We remove the flowers of a plant.	(Menofia 2023
Complete the following comparison usin	a these words :
(xylem – veins – plant parts	– blood – phloem – arteries)
	-
(xylem – veins – plant parts - Plant transport system It transports different materials around	- blood - phloem - arteries) Human circulatory system - It transports the (2) around the
(xylem – veins – plant parts – Plant transport system It transports different materials around the(1) Water and nutrients are carried from the roots to the leaves through	- blood - phloem - arteries) Human circulatory system - It transports the (2) around the human body. - Blood rich in oxygen and nutrients is carried from the heart to all the body
Plant transport system It transports different materials around the(1) Water and nutrients are carried from the roots to the leaves through(3) tubes. Glucose suger is carried from the leaves to all the plant parts through(5)	 - blood - phloem - arteries) - Human circulatory system - It transports the (2) around the human body. - Blood rich in oxygen and nutrients is carried from the heart to all the body parts through(4) - Blood rich in carbon dioxide is carried from all the body parts to the heart through(6) - ribe the process that converts energy
Plant transport system It transports different materials around the(1) Water and nutrients are carried from the roots to the leaves through(3) tubes. Glucose suger is carried from the leaves to all the plant parts through(5)	 - blood - phloem - arteries) - Human circulatory system - It transports the (2) around the human body. - Blood rich in oxygen and nutrients is carried from the heart to all the body parts through(4) - Blood rich in carbon dioxide is carried from all the body parts to the heart through(6) - ribe the process that converts energy in the correct order:
Plant transport system It transports different materials around the(1) Water and nutrients are carried from the roots to the leaves through(3) tubes. Glucose suger is carried from the leaves to all the plant parts through(5) Arrange the following sentences to descrom the Sun into food inside the plant in(5)	 - blood - phloem - arteries) - Human circulatory system - It transports the (2) around the human body. - Blood rich in oxygen and nutrients is carried from the heart to all the body parts through(4) - Blood rich in carbon dioxide is carried from all the body parts to the heart through(6) - ribe the process that converts energy in the correct order: - aves to other parts of the plant.
Plant transport system It transports different materials around the(1) Water and nutrients are carried from the roots to the leaves through(3) tubes. Glucose suger is carried from the leaves to all the plant parts through(5)	Human circulatory system - It transports the (2) around the human body. - Blood rich in oxygen and nutrients is carried from the heart to all the body parts through(4) - Blood rich in carbon dioxide is carried from all the body parts to the heart through(6)



Look at the opposite figure, then choose the correct answer from those between brackets to complete the following sentences :

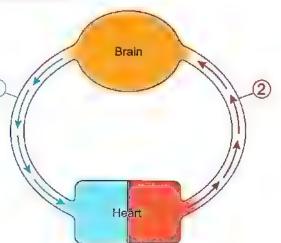
1. Vessel number (1) refers to

(a vein - an artery)

2. Vessel number (2) refers to

(a vein - an artery)

- 4. Vessels number 1 and 2 belong to system. (digestive circulatory)



LESSON FIVE

Activity 11 Seed Dispersal.

Put (√) or (x):

- 1. Plants use the energy they get from food they make to produce seeds. ()
- 2. Flowers produce seeds for the plant to help it to reproduce. ()
- Seeds are transported from one place to another, this process is called seed dispersal.

Ways of seed dispersal in nature

[1] Water:

Seeds that are dispersed by water can float on water.

Example: Coconut seeds.



(3) Animals or human transport:

Seeds that are dispersed by animals or human transport can stick to animal fur or human clothes.

Example: Burdock seeds (have spines).



[2] Wind:

Seeds that are dispersed by wind are light.

Examples:

- Maple seeds.
- · Dandelion seeds.





(4) Seeds that are eaten by animals :

Some seeds can be dispersed when they come out with the animals' stool in another place.

Examples:

- Tomato seeds.
- Apple seeds.





V Note

Different ways of seed dispersal depend on the different properties of seeds (such as : size, shape , etc).



nature

float

Check your understanding

▶ Put (√) or (x):

بذور لهندباء dandelion seeds

Light seeds travel in the air.

الطبيعة

يطفو

2. Seeds with spines stick to animal fur.

light	خفيفة	spines	أشواك	maple seeds	لذور لقيقپ
stick	يلصق / يعنق	stool	البراز	burdock seeds	بذور لأرفصيون
fur	فرء	coconut seeds	بدور جوز الهند		

Activity 12 Record Evidence Like A Scientist

You have learned a lot about plant needs and plant structures.

In this activity, which will be repeated at the end of each concept, we will learn how to think like scientists to answer a question about one of the main points of this concept through four main steps:

- Step (1): The Question. Step (2): My Claim.
- Step (3): My Evidence.
- Step (4): My Scientific Explanation.



How do the structures of a plant use water, air and light to perform life processes?

Step (2) My Claim

- Plants use different parts to obtain their basic needs of water, air and light to make their own food.
- Each part of a plant has a function to help it survive.

Your claim should be formed of a sentence that gives an answer for the previous question in step (1).

Step (3) My Evidence

- In most plants, the roots absorb water and nutrients from the soil and then the stem moves the water up to the leaves.
- If a green plant is placed in a dark place for many days, their leaves will turn yellow and the plant will die, so green plant needs sunlight to survive.



You should mention enough and suitable evidence that support your claim.



Step 4) My Scientific Explanation

- Plant roots absorb water and nutrients from the soil, then the stem transports them to the leaves through xylem.
- Plant leaves absorb carbon dioxide from air through stomata and absorb the sunlight through chlorophyll.
- During photosynthesis process, green leaves use the light energy from the Sun to combine the carbon dioxide from the air with water to produce glucose sugar (plant's food) and oxygen gas that all living organisms need to breathe.



Your scientific explanation should explain your claim and evidence introducing some supportive examples from what you have learned.

Review on Concept [1-1]

To review this concept look at the **Assessment Book** "Part 2: Final Revision".

In the Assessment Book:
Try to answer:
Self-Assessment 5

Model Exam on Concept (1.1)

53

scientific explanation تقسير علمي introduce يقدم supportive بقطي

Exercises on Lesson 5

-	1	_	-4	_	_	_	×	_	_	
	u	П	a	8	Г	5	Ţ,	а	π	C

d O Apply

Higher Thinking Skills

	Choose the correct answer :		
(1. The movement of seeds from a p	place to another is called	
	a. seeds germination.	b. seeds dispersal.	
	c. seeds reproduction.	d. seeds growth.	
(2. All the following can help in seed	dispersal, except	
	a. wind.	b. water.	
	c. human and animals.	d. soil and sunlight.	
•	3. Maple seeds travel by wind beca	use they are (Cairo 20,	231
		c. heavy seeds. d. smooth seeds.	-0/
4	4. Burdock seeds have spines, so t	hey can	
	a. float on water.	b. travel by wind.	
	c. stick to animal fur.	d. be eaten by animals.	
1	5. From the ways of seeds dispersa	l is floating on water as in(Suez 202	23)
	a. burdock seeds.	b. tomato seeds.	,
	c. dandelion seeds.	d. coconut seeds.	
2	Choose from column (B) what suit	s it in column (A) :	
i	(A)	(B)	_]
	1. Coconut seeds		-
		a. sticking to animal fur.	
	Maple seeds and dandelion seeds	b. floating on water.	
	36603	c. being eaten by animals.	- 1
	2 Burdock goods		
	3. Burdock seeds	d. traveling by wind.	
	4. Tomato seeds and apple seeds		
		d. traveling by wind.	
3	4. Tomato seeds and apple seeds	d. traveling by wind. e. staying inside flowers without movement.	
3	4. Tomato seeds and apple seeds 1	d. traveling by wind. e. staying inside flowers without movement.	
3	4. Tomato seeds and apple seeds 1	d. traveling by wind. e. staying inside flowers without movement. 3	
3	4. Tomato seeds and apple seeds 1	d. traveling by wind. e. staying inside flowers without movement. 3	
	4. Tomato seeds and apple seeds 1	d. traveling by wind. e. staying inside flowers without movement. 3)))
	4. Tomato seeds and apple seeds 1	d. traveling by wind. e. staying inside flowers without movement. 3))))
	4. Tomato seeds and apple seeds 1	d. traveling by wind. e. staying inside flowers without movement. 3))))
	4. Tomato seeds and apple seeds 1	d. traveling by wind. e. staying inside flowers without movement. 3))))))
5	4. Tomato seeds and apple seeds 1	d. traveling by wind. e. staying inside flowers without movement. 3))))))

4	Correct the underlined words:	
Ī	1. Coconut seeds disperse by wind.	(Minia 2023) ()
	2. Burdock seeds are light seeds.	(Aswan 2023) ()
	Tomato and coconut seeds being eaten by an with their stool.	imals and come out ()
5	Complete the following sentences:	
•	Some seeds can be transported from one place as seeds or traveling by wind as	
	2. Burdock seeds can stick to animal fur because	e they have
•	3. Maple seeds and dandelion seeds can travel b	y wind because they are
6	Give reasons for : 1. Seeds dispersal may take place by animal in the second s	wo different ways.
•	2. Seeds of maple or dandelion plants can dispe	rse through wind easily. (Fayoum 2023)
	3. Burdock seeds can stick to animal fur.	(Cairo 2024)



On Concept [1.1]



1	(A) Choose the correct answer:		(5 m	arks)
	1. Blood rich in carbon dioxide gas r	returns back to the heart through		
	a. arteries.	b. veins.		
	c. lungs.	d. xylem.		
	2 plant has climb stems.			
	a. Potato	b. Tomato		
	c. Vine	d. Pine		
	3. Plants produce during photo	osynthesis process.		
	a. water and glucose	b. oxygen gas and glucose		
	c. carbon dioxide gas and water	d. glucose and carbon dioxide gas		
	4. All the following can help in seed	dispersal, except		
	a. wind.	b. water.		
	c. human and animals.	d. soil and sunlight.		
	(B) What happens if?			
	We put a seed of bean in wet so	il for many days.		
2	(A) Put (\(\seta \) or (\(\times \) :	((5 ma	rks)
	1. Blood rich in oxygen gas is carried	by veins from the heart to the body parts	3. (}
	2. Light is important for plant growth.		()
	3. Plant's stem has hairs that absorb	oxygen gas from the air.	()
	4. Glucose is a type of sugar that is p	produced by plants during	`	,
	the photosynthesis process.		()
	(B) Give a reason for the following:			
	Burdock seeds can stick to anima			

(A) Write the scientific term of each of the following:	(5 marks)
 A liquid substance that plants, animals and humans need to survive. 	()
Parts of the plant that are responsible for reproduction.	(
3. The source of energy for the plant to make photosynthesis process.	()
4. The plant that has a tuber stem.	(.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
(B) Look at the following figures, then complete the following senten the words below:	ces using
(soil – figure 🖹 – figure 🖺)	
Soil	
Figure (A) Figure (B)	
1. The seeds in grow faster than those in	

2. Seeds in figure (B) should be transfered into to complete its growth.

Model 2 Exam 2

On Concept (1.1)

Total mark	<
15	

A) Complete the	following senten	ces:	(5 marks
There are sma stem to leaves		ansfer and nutrients fro	m the plant's
2. In plant's leave photosynthesis	-	the Sun is converted into	energy during
3. Arteries carry o	oxygen and nutrier	nts from the to all the bo	dy parts.
4. Tree trunks ha	vestems.		
B) Give a reason	for the following	:	
There is no lif	e on Earth in the a	absence of plants.	
	***************************************		, , , , , , , , , , , , , , , , , , , ,
(A) Choose from	column (B) what s	suits it in column (A) :	(5 marks
(A) Choose from (A)	column (B) what s	suits it in column (A) :	(5 marks
(A)	a. allow gase b. collect sun	(B) s to move into and out of the light and carbon dioxide gas v	plant. vhich combines
(A) 1. Roots 2. Stems	a. allow gase b. collect sun with water	(B) s to move into and out of the light and carbon dioxide gas we to help the plant to make its o	plant. which combines wn food.
(A) 1. Roots	a. allow gase b. collect sun with water c. absorb wa	(B) Is to move into and out of the light and carbon dioxide gas we to help the plant to make its often and nutrients from the soil.	plant. which combines wn food.
(A) 1. Roots 2. Stems 3. Leaves	a. allow gase b. collect sun with water c. absorb wat d. transport w	(B) Is to move into and out of the light and carbon dioxide gas we to help the plant to make its often and nutrients from the soil.	which combines wn food.
(A) 1. Roots 2. Stems 3. Leaves	a. allow gase b. collect sun with water c. absorb wat d. transport w	(B) Is to move into and out of the light and carbon dioxide gas we to help the plant to make its ofter and nutrients from the soil. It is a gas from the soil.	plant. which combines wn food.
(A) 1. Roots 2. Stems 3. Leaves 4. Stomata	a. allow gase b. collect sun with water c. absorb wat d. transport w of the plant e. absorbs ox	(B) Is to move into and out of the light and carbon dioxide gas we to help the plant to make its ofter and nutrients from the soil. It is a gas from the soil.	plant. which combines wn food. Its to all parts
(A) 1. Roots 2. Stems 3. Leaves 4. Stomata 1	a. allow gase b. collect sun with water c. absorb wat d. transport w of the plant e. absorbs ox	(B) Is to move into and out of the light and carbon dioxide gas we to help the plant to make its ofter and nutrients from the soil. It is a gas from the soil.	plant. which combines wn food. Its to all parts
(A) 1. Roots 2. Stems 3. Leaves 4. Stomata 1	a. allow gase b. collect sun with water c. absorb wat d. transport w of the plant e. absorbs ox 2. nderlined words: plant's roots absorb	(B) Is to move into and out of the light and carbon dioxide gas we to help the plant to make its ofter and nutrients from the soil. It is a gas from the soil. It is a gas from the soil. It is a gas from the soil. It is a gas from the soil. It is a gas from the soil.	plant. which combines who food. Its to all parts

3	(A)	Choose	the	correct	answer	
		CHOOSE	LIIC	COLLECT	allander	

(5 marks)

- 1. tree has narrow leaves.
 - a. Potato
- b. Pine
- c. Acacia
- d. Grapes
- 2. Plants can produce new seeds by
 - a. roots.
- b. leaves.
- c. stems.
- d. flowers.

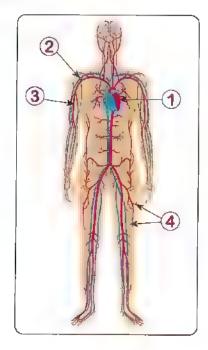
- 3.seeds travel by wind.
 - a. Coconut
- b. Maple
- c. Burdock
- d. Apple
- 4. The heart in the human circulatory system consists of
 - a. two arteries and two ventricles.
 - b. two atria and two ventricles.
 - c. two veins and two atria.
 - d. two ventricles and two veins.

(B) Look at the opposite figure, then answer:

- 1. The opposite figure represents the human system.
- 2. Label the figure:

(1)

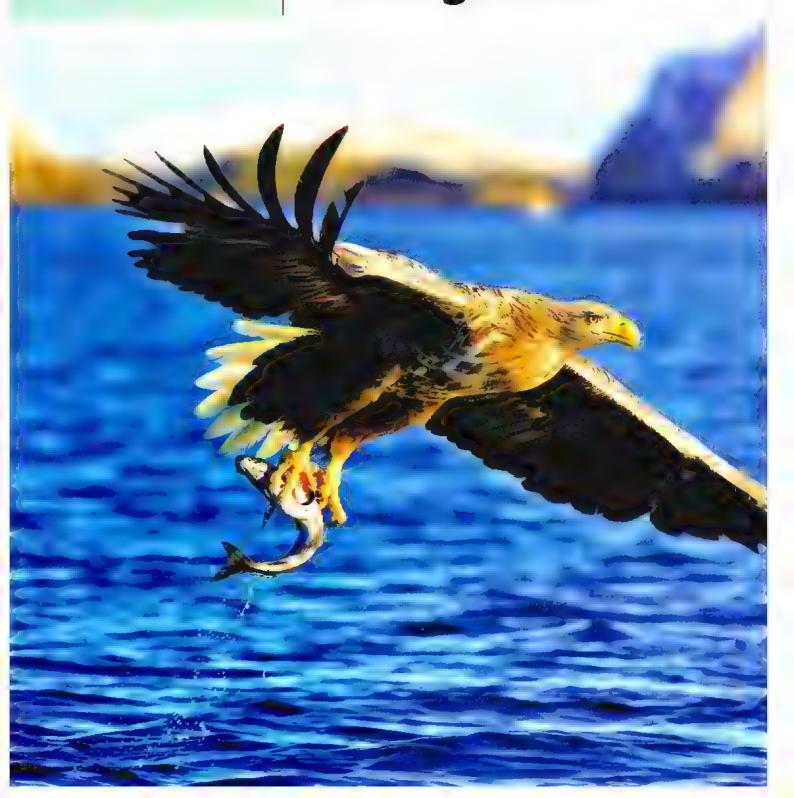
- 2 ------
- 4

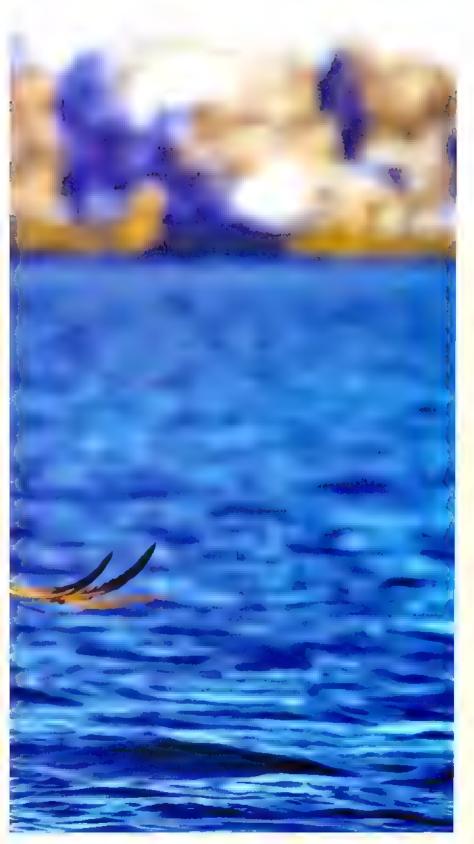


CONCEPT

1.2

Energy Flow in Ecosystems





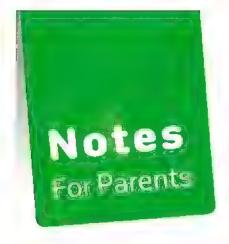
Learning outcomes

By the end of this concept, your child will be able to:

- Develop a model to show how energy moves through an ecosystem.
- Create a model to explain the different roles that organisms play in an ecosystem.
- Explain how the health of each type of organism in an ecosystem impacts the overall health of the community.

Key vocabulary

- Consumers
- Ecosystem
- Food web
- Predators
- Producers
- Decomposers
- Food chain
- Interact
- Prey



On Concept (1.2)

Lessons	Activities	What you should do with your child
	Activity 1	Explain to your child how does energy flow through an ecosystem from plants to animals and between animals when they eat each other.
1	Activity 2	Discuss with your child how hawk gets energy in an ecosystem.
	Activity 3	Explain to your child how animals eat food according to what these animals bodies need to survive.
	Activity 4	Discuss with your child the Sun is the primary source of energy for all organisms on Earth to live and how different living organisms get energy.
2	Activity 5	Explain to your child living organisms can be classified into three groups according to their way of feeding.
	Activity 6	Discuss with your child how the movement of energy and nutrients through an ecosystem can be represented using model known as a food chain.
	Activity 7	Let your child make a model of a food chain.
3	Activity 8	Explain to your child how all living organisms interact in food webs and we can draw these webs to show how organisms are connected within ecosystem.
	Activity 9	Discuss with your child how the food web is a model that shows many interactions among living organisms in an ecosystem.
4	Activity 10	Help your child to think like a scientist by answering a question about one of the main points of this concept then write his/her claim, evidence and the scientific explanation.
	Activity 11	Discuss with your child how restoration ecology is very important for plants and animals that help them have a stable environment to survive.

LESSON ONE

Activity 1 Can You Explain?





- ▶ The pictures above show different types of organisms and their environments.
- You probably know a lot about ecosystems which consist of :
 - Living organisms such as plants, animals and humans.
 - Nonliving things such as air, water, rocks, ... etc.

Ecosystem:

It is an area (or community) that contains living organisms and nonliving things that interact with each other.

- The interaction between different components of an ecosystem depends on the flow of energy through these components.
- ▶ How does energy flow through an ecosystem ?
 - Energy flows (moves) through an ecosystem from plants to animals and also between animals when they eat each other.
 - When living organisms die, their energy is returned to the soil.
- In this concept, we will study:
 - How animals get energy.
 - Food is energy.
 - Food chains.
 - Producers, consumers and decomposers.
 - Food webs and their interactions.

environment ecosystem food web community

النظام البيئى الشبكة الغذائية مجتمع

interaction components flow

التقاعن return عناصر energy food chain

برجع / يعيد السلسبة الغذائبة

asi In

Activity 2 How Hawks Get Energy

▶ Look at the opposite picture, then put (√) or (x):

 Hawk can feed on rabbits and rats. 	()
--	---	---

- 2. Hawk can feed on plant leaves. ()
- 3. Hawk hunts its prey to get energy. ()



How hawks get energy in their environment

- · Hawks get energy from food.
- Hawks generally eat different types of animals such as snakes, mice, fish, birds, squirrels, rabbits and other small ground animals.
- Hawks do not eat plants, but they eat animals who eat plants, so they also depend on plants for energy.



ONote -

There are few predators that can attack hawks such as eagles or other hawks.



What happens when the hawk dies?

When a hawk dies, it decomposes and its energy is returned to the soil.

Check your understanding

▶ Put (√) or (x):

- 1. Hawks eat plants. ()
- 2. Hawks get their energy by eating animals only. ()
- 3. When a hawk dies, its energy is returned to the soil.

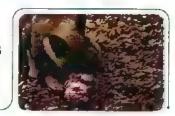
Activity 3 What Do You Already Know About Energy Flow in Ecosystems?

- An ecosystem is a community that provides food, water and shelter to all living organisms live in it.
- There are many different ecosystems on the Earth such as an ocean, a rainforest, a desert or the tundra.

What do animals eat?

Animals eat different types of food (plants, animals or both of them) to get energy. Examples:

> Caracal eats rabbits and mice.



Rabbit eats grass.



Bird eats worms.



Note -

There is a relationship between sunlight and the energy we get from our food, because the energy we get from food originally comes from the Sun.

Check your understanding

Complete the following sentences using these words:

(caracal - grass - birds)

- 1. Worms can be eaten by
- 2. Rabbit eats
- 3. Mouse can be eaten by

In the Assessment Book :
Try to answer :
Self-Assessment 6

Exercises on Lesson 1

Understand

O Apply

Higher Thinking Skills

 1. A community that includes living organisms and nonliving things is know as	n uza 2023)
 a. digestive system. b. respiratory system. c. ecosystem. d. vascular system. 2. The interaction that is present in an ecosystem occurs between a. plants and nonliving things only. b. animals and nonliving things only. c. animals and plants only. 	ıza 2023)
c. ecosystem. d. vascular system. 2. The interaction that is present in an ecosystem occurs between a. plants and nonliving things only. b. animals and nonliving things only. c. animals and plants only.	ıza 2023)
The interaction that is present in an ecosystem occurs between a. plants and nonliving things only. b. animals and nonliving things only. c. animals and plants only.	ıza 2023)
a. plants and nonliving things only.b. animals and nonliving things only.c. animals and plants only.	ıza 2023)
b. animals and nonliving things only.c. animals and plants only.	ıza 2023)
c. animals and plants only.	ıza 2023)
d. living organisms and nonliving things.	ıza 2023)
	ıza 2023)
3. Hawks get their energy by eating (G	
a. plants only. b. animals only.	
c. plants and animals. d. nonliving things.	
4. Rabbit can be eaten by all the following living organisms, except	
a. hawk. b. caracal. c. grass. d. eagle.	
5. All the following are considered as a source of energy for hawks, except	*********
a. snakes. b. birds. c. squirrels. d. seeds.	
 6. There is an energy flow between all the following two living organisms, except 	
a. a lion and a deer. b. a tomato plant and a potato plant.	
c. a human and a fish. d. a hawk and a mouse.	
7. Caracal obtains its energy by eating (Asw	an 2023)
a. shark. b. grass. c. mice. d. butterfly.	
2 Put (/) or (X):	
1. There is no interaction between the components of an ecosystem.	()
(Meno	ofia 2 023)
2. When living organisms die, all energies that present in their bodies	, ,
go to the soil.	()
3. Hawks do not eat some types of food like plant leaves. (Cairo 202	(4) (
4. There is no energy flow between living organisms that live in seas and	()
oceans. 5. Birds eat insects to get their energy.	()
6. The energy we get from food originally comes from the Sun.	()

Write the scientific term of each of the following	owing :
1. A community that contains living organism	ns and nonliving things.
	(Cairo 2024) ()
2. A place that provides food, water and she	Iter to all living
organisms that live in it.	(Cairo 2023) ()
4 Complete the following sentences :	
1. Hawks attack rabbits to get their energy, we their energy.	while rabbits feed on to get
2. When living organisms die, their energy is	returned to the . (Alex. 2023)
3. An area that provides food, water and she in it, is known as	
4. There are many types of ecosystems on the arainforest and	he Earth such as,
5 Give a reason for the following:	
Animals eat different types of food.	
6 What however if 2	
What happens if?	
A hawk is placed in an ecosystem that doesn	
except plants.	(Cairo 2023)
Study the following figures which show throw the sentences below:	ee different areas (A) , (B) and (C) ,
Area (A) Area (B)	Area (C)
Areas () and () represent an ecliving organisms, while area () represent three different living organisms.	
2. Photosynthesis process doesn't occur in a	rea ().
3. Energy flow can be occurred between anir	nal and human in areas (

and (.....).

LESSON TWO

Activity 4 Food is Energy

▶ Put (√) or (×):

- Energy flows from plants to animals in the ecosystem.
- 2. All living organisms get energy from their food. (

How do we get energy?

- Food and the oxygen we breath provide us with energy that we need throughout the day.
- We need energy to do all activities in our daily life such as thinking, breathing and moving.
- There are some activities require a lot of energy such as hard work or doing exercises.
- Our bodies still use some energy even when we sleep.



The primary source of energy

The Sun is the primary source of energy for all organisms on Earth to live, grow and carry out life processes.

▶ How plants get energy from the environment :

- Plants can make their own food through photosynthesis process by absorbing the sunlight through their leaves and use the sun's energy to convert water and carbon dioxide gas into glucose sugar.
- Glucose sugar is the food of plants that provides them with energy.



▶ How animals get energy from the environment :

- Animals including humans cannot make their own food, but they get energy from the environment in which they live.
- · Different animals can get their food by :
 - Eating plants only.
 - Eating other animals that eat plants.
 - Eating both plants and animals.

From the previous explanation, we can conclude that:

- The energy produced from the Sun passes through all life on Earth.
- Living organisms can either produce their own food such as plants or get food from other organisms such as animals including humans.
- Photosynthesis process is important for life on Earth.

Check your understanding		
▶ Put (√) or (x):		
1. Plants cannot make their own food.	()
2. The Sun is the primary source of energy for all living organisms on		
the Earth.	()
3. There are some activities require a lot of energy such as hard work		
and doing exercises.	{)



Activity 5 Food Chains

Energy for life

- All living organisms eat food to get the energy they need to survive.
- Living organisms feed on one another, so energy passes between them.
- Living organisms can be classified into three main groups according to their way of feeding, which are:



(2) Consumers.



(3) Decomposers.

Producers

They are able to produce their own food in the form of **glucose sugar** which is rich in **energy**.

Producers:

They are organisms that can make their own food and don't feed on other plants or animals.

Example: Plants use energy from the Sun to produce their own food by photosynthesis process.



Note

Nearly all of the producers on the Earth are plants.

2 Consumers

They cannot produce their own food.

Consumers:

They are organisms that eat other living organisms to get their energy, because they cannot make their own food.

Examples: There are three types of consumers which are:

Primary consumers

- They are animals that eat plants and they are also known as "herbivores".
- Many insects, rabbits and mice are primary consumers.



Secondary consumers

- They are animals that eat the primary consumers.
- Birds and frogs are secondary consumers, because they eat insects and other organisms that eat plants.



Tertiary consumers

- They are animals that eat the secondary consumers.
- Tertiary consumers are often large meat-eating animals like alligators, lions and sharks.



3 Decomposers

They recycle nutrients back into the ecosystem through the process of decomposition of dead organisms.

Decomposers:

They are organisms that carry out the process of decomposition by breaking down or decaying dead organisms.

Examples:





Notes -

- 1. Worms and millipedes are considered as decomposers.
- Worms and millipedes eat dead organisms and produce waste which is rich in nutrients that increase the soil fertility for plant growth.



millipede

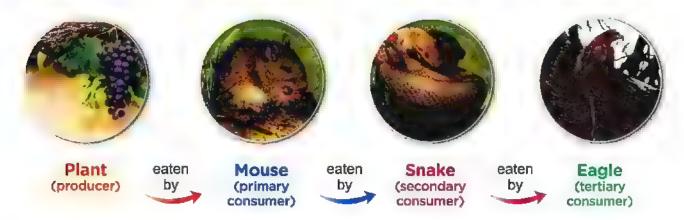
From the previous explanation, we can conclude that:

- Energy flows through an ecosystem between living organisms.
- The flow of energy through an ecosystem can be represented using model known as a "food chain".

Food chain:

It is a model that shows how energy passes from one organism to another in an ecosystem.

Example:



▶ From the above example, we can conclude that energy passes from one living organism to another through a food chain, where :

- Producers are considered as the first link in any food chain.
- Consumers (primary, secondary and tertiary) are considered as the second link in any food chain.
- Decomposers are considered as the final link in any food chain, where they
 decompose the dead organisms and recycle nutrients (energy) back into the
 ecosystem.

Check your understanding

Complete the following sentences using these words:

(producers - decomposers - consumers)

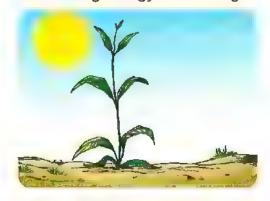
- 1. Nutrients are recycled back to the ecosystem by
- 2. Living organisms that cannot produce their own food are called
- 3. Living organisms that are able to make their own food in the form of glucose sugar which is rich in energy are called

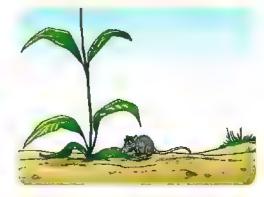
Activity 6 Energy Flow:

- As you know that all organisms need energy to do their activities and this energy flows through an ecosystem.
- There are organisms that cannot get energy directly from the Sun, so they obtain their needed energy by eating other living organisms.
- You also learned that food chain shows the food relationships (energy relationships) among organisms in different ecosystems.

Example of a food chain

- A green plant makes its own food using energy from sunlight.
- 2 A mouse eats the green plant to get energy.



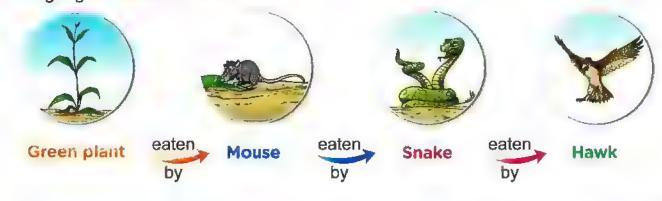


- 3 Then a snake eats the mouse to get energy.
- 4 Then a hawk eats the snake to get energy.





So, we can form a food chain that shows the relationship among the previous living organisms as follows:



From the previous explanation, we can conclude that :

- The energy from the Sun passes to the green plant, then to the mouse and snake then finally to the hawk.
- Green plant can make its own food using the sunlight, while animals like mouse, snake and hawk cannot.

Predator and prey

In the previous food chain, we can observe that:

- The hawk and the snake are "predators", because they hunt other animals.
- The snake and the mouse are "preys", because they are hunted by other animals for food.

So, both predators and preys pass food and energy through the food chain.

Notes

- 1. Any animal that is hunted and eaten by another animal is called "prey".
- 2. Any consumer that hunts and eats another animal is called "predator".

Check your understanding

_	-	1			
	Put	(./)	OF	1 4 3	
	r ut	LYJ		· ~ /	-

1. Any animal that is hunted and eaten by another animal is called predator.()
2. In any food chain, the plant is considered as a prey. ()
3. The energy from the Sun can pass to the mouse directly. ()
4. Primary consumers are known as herbivores. ()

In the Assessment Book :
Try to answer :
Self-Assessment 7

Exercises on Lesson 2

Understand

Apply

Higher Thinking Skills

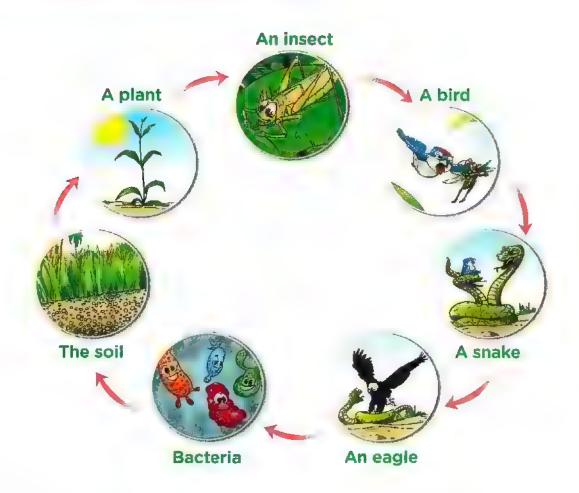
1	1 Choose the correct answer:	
1	1. Living organisms that can absorb sunlig	ght to make their own food are
	a. animals only. b. p	lants only.
	c. humans and plants. d. a	nimals and plants.
4	2. We need more energy during	
	a. watching TV. b. s	leeping.
	c. listening to music. d. d	oing exercises.
7	3. Plants can make their own food through	n process. (Alex. 2023)
I	a. breathing b. p	hotosynthesis
!	c. digestion d. re	eproduction
	4. Leaves of green plants absorb the sunl	ight to combine water with
	to produce their own food.	(Giza 2023)
	a. oxygen gas b. s	oil
	c. carbon dioxide gas d. rd	pots
-	5. The primary source of energy for all livi	ng organisms on the Earth is
	a. the Sun. b. g	reen plants.
	c. glucose sugar. d. p	hotosynthesis process.
•	6. All the following sentences are correct	about photosynthesis, except
	a. it depends on sunlight.	
	b. it produces glucose sugar and carbo	n dioxide gas.
	c. it produces glucose sugar and oxyge	n gas.
	d. it occurs in plant leaves.	
İ	7. According to the way of feeding, living	organisms are classified into main
	groups.	
	a. two b. three c. fo	our d. five
•	8 need energy to survive.	
	a. Consumers only	
	b. Decomposers only	
ŀ	c. Consumers and decomposers only	
	d. Producers, consumers and decompo	sers
-	9. Photosynthesis process produces	
	a. glucose sugar in consumers. b. g	
	c water in consumers d w	rater in decomposers

a. Worms b. Grasse	s only c. Trees only d. Grasses and trees
Choose from column (B) wha	it suits it in column (A) :
(A)	(B)
Photosynthesis process Respiration process Decomposition process	 a. it produces nutrients which are important for soil fertility. b. it produces light which is important for plants. c. it produces oxygen gas which is important for breathing. d. it produces carbon dioxide gas which is
	important for plants.
1	3
Put (🗸) or (X) :	
	hat don't need energy like listening to music. (
2. Butterfly can produce its ov	
B. Hard works or severe exerc	
4. Producers don't need cons	
5. All living organisms don't n	· ·
	ced by producers has a low amount of energy. (
•	n hot sunny weather, but they cannot live in
a completely dark room.	(
a completely dant reem,	
•	use carbon dioxide gas for making their food. (
•	
3. Producers and consumers	
3. Producers and consumers	(Giza 20
3. Producers and consumers9. Birds are secondary consuon plants.	(Giza 20
3. Producers and consumers9. Birds are secondary consuon plants.9. Eagle is a tertiary consume	(Giza 20) Imers, because they eat insects that feed (er, where it is a large meat-eating animal.
B. Producers and consumersBirds are secondary consuon plants.Eagle is a tertiary consument.The first link in any food characterists	(Giza 20) Imers, because they eat insects that feed (er, where it is a large meat-eating animal.
B. Producers and consumersBirds are secondary consuon plants.Eagle is a tertiary consument.The first link in any food cheese.Consumers depend on the	(Giza 20) Imers, because they eat insects that feed (er, where it is a large meat-eating animal. (Giza 2023) (

2. It is the primary source of energy for all living organisms on the Earth.)
2. It is the primary source of energy for all living organisms on the Earth.	
Earth. (
)
3. A type of living organisms that can produce its own food by	
absorbing sunlight. ()
4. The sugar that is formed inside plants during photosynthesis	
process. (
5. The gas that is present in air and necessary for the formation of	
plant food. (Ismailia 2023) ()
6. The gas that is produced from photosynthesis process.)
(Damiet	tta 2023)
7. Living organisms that both humans and animals need to	
survive. ()
8. A group of living organisms that can live on decaying dead	
organisms. (Cairo 2023) ()
9. It is a process through which decomposers can recycle nutrients back	
·)
10. It is a model that shows how energy flows from one organism to	
)
·)
12. The consumer that hunts and eats another animal. (Beheria 2024) ()
5 Complete the following sentences :	
1. All living organisms need to do their activities and to carry out the	heir
life processes.	
2. Sunlight energy converts and into glucose inside the	plant
leaves.	
3. Both humans and animals cannot produce their own	
4. Plants produce and during photosynthesis process.	
(Cair	ro 2023)
5. Living organisms include, consumers and decomposers.	
6. Decomposers and depend on producers to get their energy.	
7. The most common producers are	
8. The light energy of the Sun cannot flow directly to consumers and	

4	In a food chain, the energy flows from a consumer to a secondary consumer.
1	10. Decomposers are responsible for recycling to the soil, that are needed for plants growth.
(Give reasons for :
•	1. Human needs to eat some animals and plants.
•	2. Sunlight is important for all living organisms. (Damietta 2023)
•	3. Consumers depend on producers to get their energy.
•	4. Soil fertility depends on decomposers. (Beheira 2024)
7	What happens if ?
	There is no sunlight reaches the Earth's surface.
	2. All primary consumers disappear from a certain food chain. (Giza 2023)
	3. All types of decomposers are absent from an ecosystem.
8	Form the following food chain by using the words between brackets, then complete the sentences below :
	(Duck - Grasses - Fox)
	(1) (2) (3)
	a. This food chain doesn't contain consumer.
	b. The group of living organisms that is responsible for the final link of this food chain is
	c. Grasses use energy of the Sun during process.
	d. In this food chain, the duck is considered as one of primary consumers which are also known as

9 Study the following figure that shows how nutrients are recycled back into the soil, then complete the sentences below:



- 1. Photosynthesis process is done by, so it is a producer.
- 2. Decomposition process is done by, so they are decomposers.
- 3. The insect is a consumer, because it eats the plant.
- 4. The large meat-eating animal is the
- 5. When the eagle dies, its nutrients return back to the with the help of bacteria.

LESSON THREE

Activity 7 Food Chain

You have learned that food chain is a model that shows the flow of energy among living organisms in an ecosystem.

Now, let's make a model of a food chain.

Complete the following food chain model using these words:

(Bird - Grass - Snake - Hawk)

→ Grasshopper → →



Some living organisms obtain their needed energy by eating other living organisms.

Because they cannot get energy directly from the Sun.

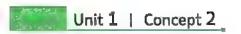
Check your understanding

▶ Look at the following food chain, then put (√) or (x):



model

Frog is considered as a tertiary consumer.



Activity 8 Food Webs

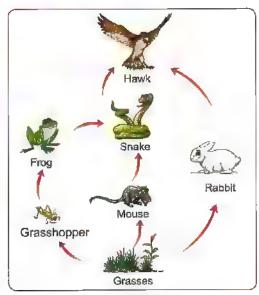
All living organisms interact in food webs and we can draw these webs to show how organisms are connected within ecosystem.

Food web:

It is a model that shows several interconnected food chains among living organisms.

interconnected food chains

 We know food chains show the relationship of food and energy that passes from one organism to another, where:



Food web

- As you have studied, the Sun provides energy for producers such as plants to make their own food during photosynthesis process.
- Then, plants provide food for a series of consumers which may eat only plants or eat both plants and animals.
- So, the ways in which many food chains interact within an ecosystem form a food web.

Check your understanding

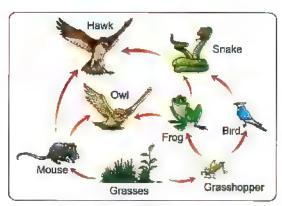
Classify the following organisms in the table below:

(Hawks - Grasses - Insects - Trees - Alligators - Mice)

Producers	Predators	Prey	
	1 1/42144*********************************	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	114714177777774444	***************************************	

Activity 9 Interactions in Food Webs

- From the opposite food web, we notice that:
 - Food web shows that many different organisms share food resources within ecosystem.
 - Several different consumers may eat the same producer or prey.



Food web

- ► Food webs show that different organisms in an ecosystem are connected to allow energy to pass between them to survive, where :
 - Producers are eaten by some consumers.
 - Some consumers are eaten by other consumers.
 - Some consumers may eat the same producer or prey.

Give a reason for:

It is better to use a food web to show interactions among living organisms than a food chain.

Because a food web shows interactions among many food chains so, the food web contains many organisms, while a food chain shows interactions between just few organisms.

Check your understanding

- Put (√) or (x):
 - Food webs show that many different organisms share food resources within ecosystems.
 - 2. Food chains show interactions among many food webs. (

In the Assessment Book:
Try to answer.
Self-Assessment 8

Exercises on Lesson 3

Understand

O Apply

Higher Thinking Skills

1	C	hoose the correct answer:
۲	1.	. All the following are types of food for primary consumers, except
		a. grasses. b. grains. c. fruits. d. eagles.
•	2.	. Both animals and humans bodies
		a. can absorb sunlight to make their own food.
		b. cannot absorb sunlight to make their own food.
		c. breathe carbon dioxide gas.
		d. don't need water to drink.
	3.	. A hawk can eat, when snakes are completely disappear from an ecosystem.
		a. grasses b. grasshoppers c. mice d. leaves
•	4.	. It is better for any predator to depend on to get its energy and survive.
		a. one species of consumers only b. many species of consumers
		c. one species of decomposers only d. many species of decomposers
	5.	. All types of plants are similar in all the following characters, except they
		a. are able to make photosynthesis process.
		b. are eaten by primary consumers.
		c. can feed on predators.
		d. live in different types of ecosystems.
	6.	. Human is a living organism.
		a. producer b. consumer c. decomposer d. predator
ł	7.	. Secondary consumers can eat only (Cairo 2023
		a. decomposers. b. producers.
		c. primary consumers. d. tertiary consumers.
ŀ	8.	. Food web shows interactions between (Fayoum 2023
		a. few nonliving things. b. many nonliving things.
		c. few living organisms. d. many living organisms.
0	9.	. In a food chain, there is afound between a producer and a secondary consumer.
		a. decomposer b. predator
		c. primary consumer d. tertiary consumer

2	Put (✓) or (x):			
•	1. A hawk can get directly its needed energy by eating beetles. (Ale	x. 2023) ()	
•	2. There are some consumers that can eat both plants and animals.	()	
0	3. In a food chain, the energy can pass from a producer to a nonliving	thing		
1	then to a primary consumer.	()	
6	4. Hawks, alligators and sharks are predators.	()	
1	•	iro 2023) ()	
•	6. Food web is the interconnected food chains that shows many			
	·	nia 2023) ()	
	7. All living organisms feed on each other to get energy.	()	
3	Complete the following sentences by using the words between brace	kets:		
	(primary consumers – producers – food web – secondary cons			
•	The interaction among many food chains is known as	•	241	
(
Ì	2. In any food chain, plants are considered as	(Suez 20.		
Ĭ	3. If a frog eats an insect that feeds on plants, this means that the frog			
1	4. Humans can eat producers and	(Cairo 20.	23)	
4	Study the following food web, then choose the correct answer:			
	Butterflies			
	Plants Worms Birds Sna	akes		
	J. Silver	inco		
	Grasshoppers			
	1. When disappear from this food web, birds are moving away t	n search f	or	
	food in another ecosystem.	o scarciji	Ų.	
	a. butterflies only b. worms only			
	c. grasshoppers only d. primary consumers			
	2. Grasshoppers may die when there is no			
	a. birds. b. snakes.			

d. butterflies.

c. plants.

5 Look at the following figures, then choose the correct answer:







Figure (2)



Figure (3)



Figure (4)

- 1. In figure (.....) snake is considered as a prey.
 - a. 1
- b. 2
- c. 3
- d. 4
- 2. In figure (.....) snake is considered as a predator.
 - a. 1
- b. 2
- c. 3
- d. 4
- 3. The bird in figure (3) is considered as a
 - a. primary consumer.
- b. secondary consumer.

c. producer.

- d. prey.
- 4. From the previous figures, energy passes directly between
 - a. plant and eagle.

b. insect and snake.

c. plant and snake.

d. snake and eagle.

LESSON FOUR

Activity 10 Record Evidence like A Scientist

- ▶ In this concept, you have learned a lot about energy flow through an ecosystem, food chains and food webs.
- Now, try to think like a scientist by writing your claim, your evidence and your scientific explanation about one of the main points of this concept through the four steps you have learned in concept one.

? Step 1 The Question
How does energy flow through an ecosystem ?
Step 2 My Claim
Step 3 My Evidence
•
Step 4 My Scientific Explanation
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,

claim فرضية evidence دليل scientific explanation فرضية



Activity 11 S T E M in Action

In this activity, we will talk about Dr. Becky Barak who is a plant-community ecologist.

Dr. Becky Barak

- She is a plant-community ecologist, which means she studies groups of plants and gets to do her researches out in the natural areas where plants and animals exist.
- She always loved plants and animals since her childhood, but she did not know that there was a science through which she can study plants and animals.



 She started to learn about ecology, then she studied a class in restoration ecology which means "rebuilding habitats that are damaged".

Seed Dispersal

- * Dr. Becky Barak has learned many interesting things such as :
 - Different plants need different ways to transport (disperse) their seeds.
 - There are plants with sticky seeds that stick to human clothes or an animal's body, so human or animal can carry these seeds to another place where seeds fall down.
 - Other plants have light seeds that are dispersed by wind, these seeds are carried away by winds to new habitats to grow in other places.

Careers in ecology

- If you are interested in the natural world, you can share in conservation or restoration work in your area to help take care of plants and animals.
- · Your interest in nature now could lead to a career in ecology in the future.

Check your understanding

Put (√) or (x):

- 1. Dr. Becky Barak does her research in the lab. (
- 2. Different plants need different ways to transport their seeds. (

Review on Concept [1-2]

To review this concept look at the **Assessment Book** "Part 2: Final Revision".

In the Assessment Book:

Try to answer:

- Self-Assessment (9)
- Model Exam on Concepts (1.1) & (1.2)

)

Exercises on Lesson 4

Understand

O Apply

Higher Thinking Skills

1		hoose the correct answer :			
	1	Restoration ecology means	S.		
	2. All the following ways help plants to disperse their seeds, except				
1		a. water.	b. air.		
		c. animal bodies.	d. sunlight, (Qalyo	ubia 1	2023)
	3.	Plants with sticky seeds need a new habitat. a. air	to stick to, then disperse and grow b. water	in in	
		c. light energy from the Sun			
	4.	Wind play an important role in disp a. small light c. sticky	b. big heavy d. floating	Cairo 2	2023)
2	P	ut (✓) or (X) :			,
•		Ecologists should do their research	nes in natural areas that contain		
		animals and plants.		()
	2.	Rebuilding habitats that are damag	jed is known as restoration ecology.	()
•	3.	All plants need the same way to dis	sperse their seeds. (Giza 20)23) ()
i	4.	Both of small light seeds and big he	eavy seeds can disperse by wind.	()
3	G	ive reasons for :			
0	1.	Sticky seeds of some plants can st	ick to human clothes or an animal's	body 	
}	2.	Studing restoration ecology is very	important.		



On Concept [1.2]

Total	mark
1	5

 Hawk eats a rabbit to get energy, this means that				
 c. the hawk is a prey. d. the rabbit is a predator. 2. Photosynthesis process produces a. glucose sugar in the producers. b. glucose sugar in the consumers. 	•			
Photosynthesis process produces a. glucose sugar in the producers. b. glucose sugar in the consumers.				
a. glucose sugar in the producers. b. glucose sugar in the consumers.				
c. water in decomposers. d. water in consumers.				
·				
3. All types of plants are similar in all the following characters, except				
a. they are eaten by primary consumers.				
b. they are able to make photosynthesis process.				
c. they live in different types of ecosystems.				
d. they can feed on predators.				
4. Which of the following food chains shows the correct way of energy flow t	through			
living organisms ?				
a. Producer — → predator — → primary consumer.				
 b. Predator → producer → secondary consumer. 				
c. Producer —→ primary consumer —→ predator.				
d. Producer —→ secondary consumer —→ predator.				
(B) What happens if?				
All types of decomposers are absent from an ecosystem.				
(A) Put (✓) or (X):	(5 marks)			
All plants need the same way to disperse their seeds.	()			
Food web shows interaction between few living organisms.	()			
3. The first link in any food chain is a consumer.	()			
4. Hawks, alligators and sharks are considered as predators.	()			

	(B) Give a reason for the following:
	Some living organisms obtain their needed energy by eating other living organisms.
3	(A) Complete the following sentences: (5 marks)
	 All living organisms need to do their activities and to carry out their life processes.
	2. Plants produce and during photosynthesis process.
	3. In a food chain, the energy flows from a consumer to a secondary consumer.
	4. An area that provides food, water and shelter to all living organisms which live in it, is known as
	(B) The following figure shows an energy flow through a food chain :
	Producer Animal (A) Animal (B)
	Which of the following is correct about this food chain?
	a. Animal (A) is a predator. b. Animal (A) is a secondary consumer.
	c. Animal (B) is a tertiary consumer. d. Animal (B) is a predator.



On Concept (1.2)

otal	mark
_	_
1	5

1	(A) Choose the	correct answer :			(5 marks)
	1. The en	ergy that comes fi	rom the Sun is importe	ant for the pho	otosynthesis
	a. sound	b. light	c. kinetic	d. potential	
	Plants with st habitat.	icky seeds need .	to stick to disper	se and grow i	in a new
	a. light energy c. air	y from the Sun	b. body of a livingd. water	organism	
	3. Which one of	the following livin	g organisms can mak	e its own food	1?
	a. Grass.	b. A worm.	c. A bird.	d. A rodent.	
	4. Waste materia	als produced from	millipedes and worms	s are rich in	
	a. oxygen gas	5.	b. carbon dioxide	gas.	
	c. water.		d. nutrients.		
	(B) Give a reaso	n for the followir	ng:		
	Consumers	depend on produc	ers to get their energy	y.	
	**********			+1>1> 1(\$*********************	****** ********************************
	4.111111			** ************************************	····
2	(A) Write the sc	ientific term of ea	ach of the following :		(5 marks)
	 It is the prima the Earth. 	ry source of energ	gy for all living organis	ms on	()
	2. A group of livi	ng organisms that	t can produce their ow	n food.	()
	3. The animal th	nat is eaten by and	other animal.		()
	4. It is a model t another in an		ergy flows from one o	organism to	()
	(B) Correct the u	underlined words	:		
	1. In any food ch	nain, plants are co	nsidered as <u>consume</u>	rs.	()
	2. If a frog eats a primary con		ds on plants, this mea	ns that the fro	g is ()

(A) Choose from column (B) what suits it in column (A):

(5 marks)

(A)	(B)
Carbon dioxide gas Oxygen gas	a. without its energy, photosynthesis process cannot begin.
3. Water 4. Sunlight	 b. it combines with oxygen inside the plant leaves to produce glucose sugar. c. it is produced from photosynthesis process. d. it is absorbed by plant roots from the soil. e. it combines with water inside the plant leaves to produce glucose sugar.

1	2	3	4
(B) What happens	if?		
There is no sun	light reaches the E	arth's surface.	





Learning outcomes

By the end of this concept, your child will be able to:

- Demonstrate through modeling how changes in an ecosystem can disrupt a food web.
- Construct an explanation about how human activity can negatively impact an ecosystem.
- Argue for possible solutions to environmental problems that can restore the health of an ecosystem.

Key vocabulary

- Climate
- Conservation
- Nurserv
- Pollution
- Habitat
- Population
- Microorganisms
- Restoration
- Microplastics

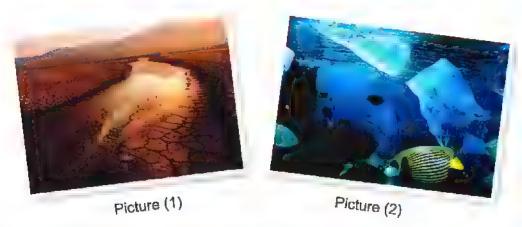


On Concept (1.3)

Lessons	Activities	What you should do with your child
	Activity 1	Discuss with your child what might happen to a food web when an organism disappears or the environment changes within an ecosystem.
1	Activity 2	Explain to your child how we can protect the marine environment in Palau island.
	Activity 3	Explain to your child how the change in ecosystem affects the food web.
	Activity 4	Discuss with your child how the energy transfers from the prey to the predator.
2	Activity 5	Discuss with your child the flow of energy in the desert food web.
	Activity 6	Explain to your child how a population of one species affects the population of other species.
3	Activity 7	Explain to your child why healthy habitats are important to all organisms in the food web.
3	Activity 8	Explain to your child the effect of plastic products on marine life.
4	Activity 9	Help your child to think like a scientist by answering a question about one of the main points of this concept then write his/her claim, evidence and the scientific explanation.
4	Activity 10	Explain to your child how scientists, engineers and citizens work on habitat restoration.

LESSON ONE

Activity 1 Can You Explain?



From the previous pictures, we can notice that:

- In picture (1):
 - The water of the lake is evaporated due to the hot of the Sun.
 - The ground is dried around the lake due to the drought conditions.
- · In picture (2):

The sea is polluted due to throwing of plastic garbage of some ships into the sea.

▶ What might happen to a food web when an organism or the environment changes within an ecosystem?

All organisms may be affected, where:

- If producers (plants) were disappeared from an ecosystem, the consumers will need to move to other places to search for food or they will die.
- If the number of one species of consumers in an ecosystem increases,
 the resources of food and shelter may disappear, so they will die.

In this concept, we will study:

- Protecting ecosystems.
- Population changes.
- Habitat loss.
- Plastic pollution.
- Habitat restoration.

Activity 2 Protecting Ecosystems

▶ Put (√) or (x):

- Human activities such as overfishing can affect marine habitats.)
- 2. Throwing plastic in seas affects the life of marine organisms.

Human activities affect the water ecosystems through:

- Overfishing (when humans catch many fish from rivers, seas and oceans).
- Water pollution (when humans throw waste materials in rivers, seas and oceans).

Protection of the marine environment in Palau Island

- On any island, we can observe that what is happening on land affects what is happening in the marine environment.
- People in Palau uses different conservation programs to protect the marine environment and its resources by creating well-designed protected marine environment, where:



Palau island

- People in Palau control human activities on land to keep the protected marine environment from pollution by avoiding throwing waste materials into the ocean.
- Fishermen must not overfish the coral reefs to conserve the marine environment.

Check your understanding

Put (√) or (x):

- Water pollution cannot affect the marine habitats.
- 2. People in Palau must control the human activities on land to protect the marine habitat from pollution.

Activity 3 What Do You Already Know About How Food Webs Can Change?

- Relationship between all the components of an ecosystem play an important role in keeping this ecosystem balanced.
- When an ecosystem changes, food webs in this ecosystem change too, as shown in the following cases:

What would happen if?	Result	Reason		
There is a gentle rain in the desert	The desert ecosystem may be improved.	Because rainwater will feed the plants (producers) which will feed the organisms.		
There is a heavy rain in the desert	The desert ecosystem may be harmed.	Because the water of heavy rain will cause flooding which will destroy the ecosystem.		
There is a drought and all the grass dies	The food web in the ecosystem may be destroyed.	Because the plants will die and also the organisms will die.		
There are many top predators in the food web	The other organisms in the food web may be harmed.	Because the top predators will eat all the organisms.		

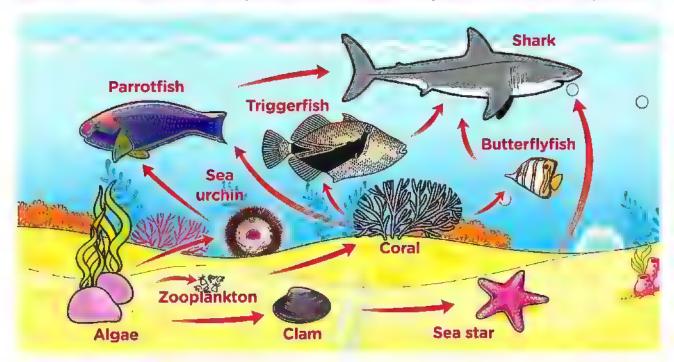
V Note

Top predators: They are predators (consumers) that exist at the top of food chains such as: Tigers, lions, sharks, crocodiles, ...etc.

Food webs

You have known from the previous concept that the food web is a model shows several interconnected food chains.

▶ Look at this marine food web, then observe which organisms eat other organisms.



From the previous marine food web, we observe that :

Algae produce their own food.



The zooplankton, clam and sea urchin feed on the algae.



- The sea star feeds on the clam.
- Coral feeds on the zooplankton.



The shark feeds on the sea star and the three different fish.



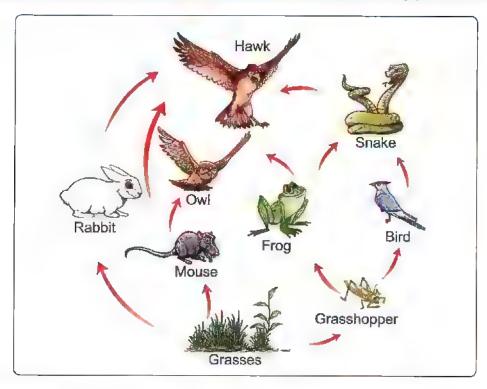
- Butterflyfish and triggerfish feed on coral.
- Parrotfish feeds on coral and sea urchin.

My ecosystem

In an ecosystem the Sun produces energy that the plants take, then this energy transfers to consumers that when they die, the decomposers break them down into nutrients that can be returned to the ecosystem.

▶ Look at the following food web, then complete the sentences below using these words :

(snake - grasses - bacteria - rabbit - frog - grasshopper - mouse)



_	The produ	cer is the	*****************	as they	produce	their ow	a food
	THE PICTOR		*****************	as illev	DIOGUCE	THEST CAM	i luuu.

- The consumers are the mouse,	and a	as they feed on grasses.
--------------------------------	-------	--------------------------

- The owl can feed on the and
- The hawk can feed on the rabbit, and mouse.
- When the hawk dies, it decomposes by which recycle nutrients back to the ecosystem.

Check your understanding

Choose the correct answer:

- 1. When there is a gentle rain in the desert , the desert escosystem may be
 - a. harmed.
- b. destroyed.
- c. improved.
- d. polluted.

- 2. Algae are considered
 - a. consumers.
- b. producers.
- c. decomposers.
- d. dead creatures.

In the Assessment Book:
Try to answer:
Self-Assessment ①

Exercises on Lesson 1

Understand

O Apply

Higher Thinking Skills

, CI	loose the correc	t allower .			
1.	The Sun provide	s the Earth with	\$*** \$ \$ \$ \$ \$ \$ \$ \$		
	a. light only.	b. warm only.	c. light and warm	.d. light and so	und.
2.	On extreme hot	climate, the water	of a lake		(Assiut 2023)
	a. increases due	to evaporation.	b. decreases due	to evaporation	
	c. changes into i	ce.	d. has a lower ter	nperature.	
3.	All the following	factors pollute the	water, except		(Assiut 2023)
	a. sunlight.		b. animals wastes	S.	
	c. human wastes	6.	d. plastic garbage	€.	
4.	If the amount of	grasses increases	s in an ecosystem,	this directly inc	reases
	the number of	******			(Cairo 2023)
	a. caracals.	b. hawks.	c. rabbits.	d. lions.	
5.	When the number	er of, the ar	mount of grasses i	n an ecosystem	increases.
	a. producers ded	creases	b. decomposers	decreases	
	c. primary consu	imers increases	d. secondary con	sumers increas	es
6.	_	throwing plastic g	arbage in the sea a	affect the surviv	al of
	directly.		h marina argania		
	a. desert organis		b. marine organisd. rodents	ins	
	c. rainforest orga				
7.		are numan activiti	es that affect a ma	rine ecosystem	,
	a. flooding.		b. throwing huma	n wastes	
	c. overfishing.		d. throwing plastic		
0	_	aentle rain in a de	sert ecosystem, th		av he
0.	a. harmed.	_	c. destroyed.	d. not change	
0			·	d. Not ondrigot	1.(Odiro 2020)
9.	_	are top predators,		d lione	
40	a. hawks.	b. tigers.	c. butterflyfish.	d. lions.	l 4
10.		web usually starts		•	Menofia 2023)
	a. clam.		c, zooplankton.		
11.			rom a marine ecos	ystem, the surv	ival of
	may be affected.		c. sea urchin	d con etare	
	a. Huuddiisii	u. aliaina	u, sca ultilli	u. Jea Slais	

2	Put (//) or (x):		
	 If producers were removed from an ecosystem, the primary consumers will need to move away. 	()
}	Overfishing is one of the human activities that affects the marine ecosystem. (Giza 20)	231 (١
7	What is happening on land doesn't affect what is happening in marine ecosystem.	,	,
9	4. Food webs don't change if their surrounding environments get changed.	()
•	If we introduce a new predator to an ecosystem, this ecosystem will be affected.	,	`
	6. If there is a heavy rain in a desert ecosystem, it will be harmed. (Cairo 20)	241)
	7. Zooplankton can make their own food by photosynthesis process.	()
}	8. In a marine food web, there are many top predators like sea star and sea urchin.	i.	ì
	9. Top predators are decomposers that present at the top of food chains.	()
3	Write the scientific term of each of the following:		
Ţ	4.18.1.18.1.19.1.19.1.19.1.19.1.19.1.19.)
-	2. A human activity that leads to decreasing the number of fish and	•	- /
	affecting many marine food webs.)
			,
4	They are consumers that exist at the top of food chains. (,
4	They are consumers that exist at the top of food chains. (********	,
4	They are consumers that exist at the top of food chains. Complete the following sentences: Throwing plastic garbage and waste materials into a river causes water. (Mi	nia 20	(23)
4	They are consumers that exist at the top of food chains. Complete the following sentences: Throwing plastic garbage and waste materials into a river causes water.	nia 20	(23)
4	3. They are consumers that exist at the top of food chains. Complete the following sentences: 1. Throwing plastic garbage and waste materials into a river causes water. (Mi) 2. If producers increase in an ecosystem, the number of primary consumer.	nia 20	(23)
4	3. They are consumers that exist at the top of food chains. (nia 20	(23)
4	 They are consumers that exist at the top of food chains. (nia 20 s will	(23)
4 5	 They are consumers that exist at the top of food chains. (nia 20 s will	(23)
	3. They are consumers that exist at the top of food chains. (nia 20	(23)
	3. They are consumers that exist at the top of food chains. (nia 20	(23)
	3. They are consumers that exist at the top of food chains. (nia 20	(23)

	total .			10	_
b	What	nap	pens	IT	

- 1. Throwing big amounts of plastic garbage and waste materials in water.
- 2. A small lake is exposed to extreme hot climate for several months.

3. The number of secondary consumers in an ecosystem decreases.

.

Study the following food chain in an ecosystem, then complete the table below:



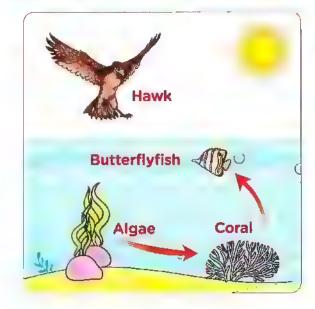
Grasses Rabbit Fox

Situations	Results
1. The number of rabbits increases.	The amount of decreases, while the number of increases.
2. The amount of grasses decreases.	The number of rabbits
3. All disappear or their role change in this food chain.	All foxes will move away to another ecosystem to search for food.
4. The ecosystem of this food chain is affected by severe drought conditions.	Alldie, because there is no water to make their own food.

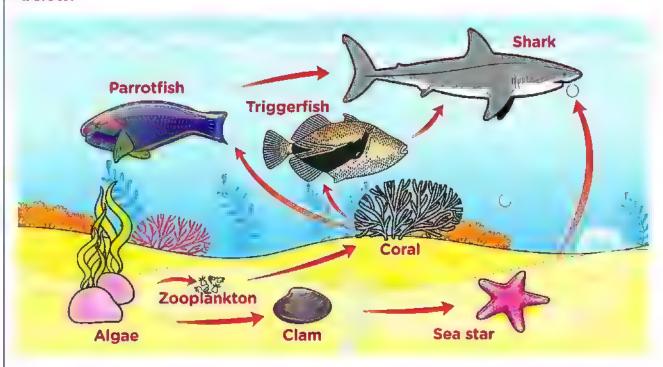
8 "What is happening on land affects what is happening in the marine environment".

According to the previous fact, study the following figure then complete the sentences below:

- 1. The living organism that can make photosynthesis process is
- 2. Energy can flow from marine environment to land, when the hawk eats
- If many sharks are present in this ecosystem, will move to another ecosystem to search for food.



Look at the following food web, then complete the sentences using the words below:



(zooplankton – primary – producer – sea star – parrotfish – triggerfish)

- Algae are the ... organisms as they produce their own food.
- 2. The coral can feed on , while and can feed on coral.
- 3. Clam and zooplankton are consumers which feed on the producers organisms.
- 4. The shark can feed on which is feed on clam.

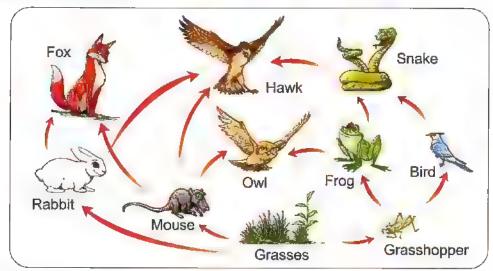
LESSON TWO

Activity 4 Energy Flow Body Model

- Put (√) or (x):
 - 1. In an ecosystem, the plants are the producers. ()
 - 2. Lion and tiger are considered the top predators in an ecosystem. ()
- Now, we are going to do an activity to make a model that shows the flow of energy through a food web.

► Tools

· A picture of a food web.



· Cards labeled with organisms.



Paper squares (represent the flow of energy in an ecosystem).



Steps

- Choose some of your friends to play with them a game of predator-prey tag.
- 2. Observe the picture of the food web carefully with your friends.
- 3. Give each one of your friends a card labeled with an organism from the above food web and a paper square.
- 4. Start the game with your friends. If one of your friends becomes a prey to another friend which is a predator, so the prey gives his paper square to the predator.



Observation

When a predator feeds on a prey, it gains energy, so the energy transfers from the prey to the predator.

Conclusions

- The energy in an ecosystem remains the same.
- Although energy is transferred between living organisms, most of the energy is recycled by decomposers back into the ecosystem.

F

Check your understanding

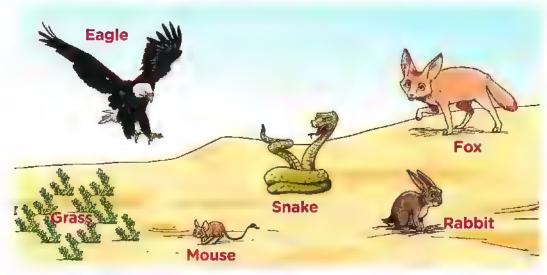
▶ Put (√) or (x):

- In a food web, the energy transfers when a prey gains energy from the predator.
- Most of the energy in a food web transfers between living organisms when an organism feeds on the other.

remain يحرص carefully يكتسب gaın يكتسب

Activity 5 Desert Food Web

▶ Look at this desert food web, then use the table below to draw the arrows that show the flow of energy through this food web:



Number of arrows		Direction of arrows
11	(2 blue arrows)	Comes out of grass
1	(1 green arrow)	Goes to the snake
111	(3 red arrows)	Goes to the fox
111	(3 black arrows)	Goes to the eagle

What would happen to ...?

- The rabbits (hares) if all the grass were removed from the previous food web.
 Rabbits would not find any food, so they would die.
- 2. The eagles if all the grass were removed from the previous food web.

 At first, the eagles would not be affected but when the rabbits die, the eagles would have less food.

Check your understanding

According to the previous food web, complete this sentence using these words:

(energy – rabbits – grass – eagles)
Rabbits feed on (consume) the, so the energy travels to the
then the eagles feed on the rabbits and the travels to
the

Activity 6 Population Changes

Population:

It is the number of organisms of one type of species living in an area.

- Any increase or decrease in the number of these organisms is known as
 "population change".
- ▶ Change in the population of one species affects the population of other species, where:

In an ecosystem, all species depend on other species for survival, so an increase or decrease in one species affects the population of other species.

Example:

Microorganisms

- They are tiny organisms that cannot be seen with our eyes.
- They can make their own food, so they are the producers in the marine food web.
- They are found in cold water habitats,
 because they need cold water to survive.
- The small fish feed on microorganisms that float on the surface of the sea.



Microorganisms

Seabirds

- They build their nests on the top of mountain cliffs.
- They dive deep down into the sea to feed on small fish which are the main source of food for many seabirds.



Seabird

▶ What will happen to microorganisms if the climate changes and the water becomes warm?

Microorganisms will move toward an area where the water is cooler



Then, the small fish that feed on these microorganisms will also move to a new habitat



Therefore, when seabirds do not have a food source, some of them will move to a new habitat, while others will die.

▶ From the previous example, we can conclude that:

The climate change affects the population of a species, where:

- When the climate change is suitable, the population of a species increases.
- When the climate change is unsuitable, the population of a species decreases because the organisms would either die or move to another place.

Check your understanding

Complete the following sentences using these words:

- 1. The feed on the small fish which feed on that float on the surface of the sea.
- 2. The number of organisms of one type of species living in an area is known as
- 3. Microorganisms are found in _____ water habitats.

In the Assessment Book : Try to answer : Self-Assessment (11)

Exercises on Lesson 2

Understand

1 Choose the correct answer:

O Apply

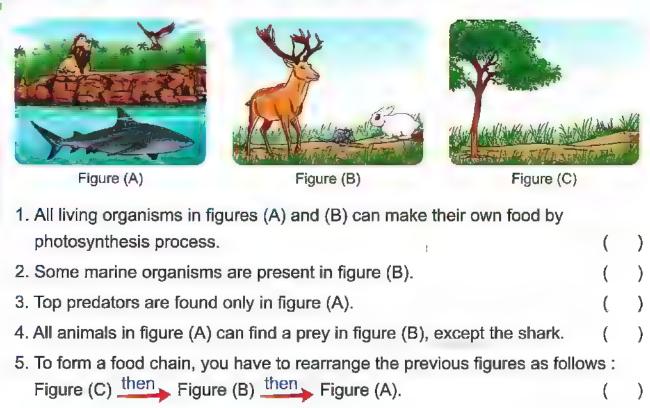
Higher Thinking Skills

0	 If there is a tertiary consumer in a a. a primary consumer only. a secondary consumer only. a primary and a secondary cond. neither primary nor secondary. The secondary consumer is consumer. a prey for primary and tertiary. a predator for primary and tertiary. a prey for primary consumer. a prey for tertiary consumer. 	nsumers. consumers. sidered as consumers.	there is/are ,
	3. In a food chain, the energy transf a. from a predator to a prey. c. from a predator to a producer.	b. from a prey to a predate	
0	If all grasses were removed compecosystem will a. increase. b. decrease.		abbits in this e affected.
	5. It is better for a predator in a fooda. only one type of decomposers.c. only one type of prey.		
	6. Any increase or decrease in the known asa. an ecosystem.c. a climate change.	number of organisms of one b. adaptation. d. a population change.	type of species is
	7. If the climate change is suitable, ta. die.c. increase.	he population of a species web. not be affected.	
	8. Seabirds build their nests	d. decrease.b. on the top of mountain of d. deep down into the river	

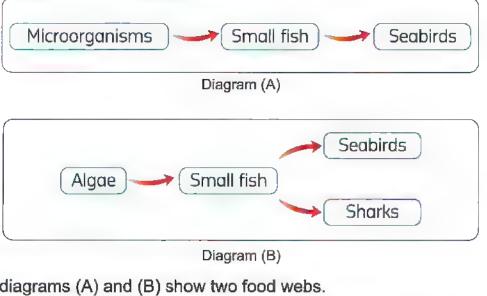
5	9.	. All the following statements are correct, except				
		a. small fish can eat seabirds. b. sharks can eat small fish.				
		c. small fish cannot eat seabirds. d. seabirds cannot eat sharks				
	10.	. The suitable habitat for microorganisms to survive is	(Alex. 2023)			
		a. hot water. b. warm water. c. cold water. d.	boiled water.			
2	P	ut (✓) or (X) :				
o o	1.	. Most of living organisms are preys for some animals and also pre	edators			
		for others at the same time.	()			
Į	2	. The Sun produces energy that decomposers use to make their fo	ood. ()			
Ģ	3.	. Any food chain can be formed of producers only.	()			
0	4.	. Energy transfers when a prey gives energy to the predator which fee	eds on it. ()			
9	5.	. A desert food chain doesn't contain any type of fish or sharks.	Gıza 2023) ()			
Ĩ	6. If the climate change is unsuitable, the population of a species will decrease. (
6	7.	7. In an ecosystem, all consumers depend on other living organisms for survival. (
•	8	. Seabirds eat small fish that swim near the water surface.	()			
			,			
•	9.	. Microorganisms are producers that small fish feed on to get ener	gy. ()			
	9.	. Microorganisms are producers that small fish feed on to get ener	gy. () (Alex. 2023)			
3		. Microorganisms are producers that small fish feed on to get ener				
3	W					
3	\ 1.	rite the scientific term of each of the following :	(Alex. 2023)			
3	\ 1.	Irite the scientific term of each of the following: They are consumers which feed on secondary consumers.	(Alex. 2023)			
3	1. 2.	Irite the scientific term of each of the following: They are consumers which feed on secondary consumers. They are living organisms that include bacteria and fungi, which	(Alex. 2023)			
3	1. 2.	Irite the scientific term of each of the following: They are consumers which feed on secondary consumers. They are living organisms that include bacteria and fungi, which return energy back to the soil.	(Alex. 2023)			
3	1. 2.	Irite the scientific term of each of the following: They are consumers which feed on secondary consumers. They are living organisms that include bacteria and fungi, which return energy back to the soil. It transfers between animals in a food web to help them do their	()			
3	1. 2.	Irite the scientific term of each of the following: They are consumers which feed on secondary consumers. They are living organisms that include bacteria and fungi, which return energy back to the soil. It transfers between animals in a food web to help them do their activities and survive.	() () () (Cairo 2023)			
3	1. 2. 3	Irite the scientific term of each of the following: They are consumers which feed on secondary consumers. They are living organisms that include bacteria and fungi, which return energy back to the soil. It transfers between animals in a food web to help them do their activities and survive.	()			
3	1. 2. 3 4 5	Irite the scientific term of each of the following: They are consumers which feed on secondary consumers. They are living organisms that include bacteria and fungi, which return energy back to the soil. It transfers between animals in a food web to help them do their activities and survive. It is the number of organisms of one type of species live in an area. Any increase or decrease in the number of organisms. Flying living organisms that build their nests on the top of mountains.	() () () (Cairo 2023) ()			
3	1. 2. 3 4 5	Trite the scientific term of each of the following: They are consumers which feed on secondary consumers. They are living organisms that include bacteria and fungi, which return energy back to the soil. It transfers between animals in a food web to help them do their activities and survive. It is the number of organisms of one type of species live in an area. Any increase or decrease in the number of organisms.	() () () (Cairo 2023)			
3	1 2 3 4 5 6	Irite the scientific term of each of the following: They are consumers which feed on secondary consumers. They are living organisms that include bacteria and fungi, which return energy back to the soil. It transfers between animals in a food web to help them do their activities and survive. It is the number of organisms of one type of species live in an area. Any increase or decrease in the number of organisms. Flying living organisms that build their nests on the top of mountains.	() (

Z	Complete the following sentences using these words:
	(population – decomposers – increase – photosynthesis – decrease – producers).
	When seawater becomes warm, the number of microorganisms will in water, while in cold water their number will in water.
	Microorganisms float on water surface as they need sunlight to make process because they are considered the in the marine food web.
	3. The number of organisms of one type of species living in an area is called
	4. The energy is recycled back to the environment with the help of
E	Complete the following sentences :
	1. Predators of living organisms may be for other living organisms.
Ģ	2. Secondary consumers feed on consumers.
	3. All energy in all living organisms return back to the environment by the help of organisms.
	4. A predator gets from the prey which feeds on.
	5. If the climate change is suitable, the population of a species will (Giza 2023)
	6. Small fish feed on
6	Give a reason for the following:
	Change in the population of one species affects the population of other species.
7	What happens if?
	1. The climate change is unsuitable for a population of one type of species.
	2. The seawater becomes warm. (Cairo 2023)

8 Study the following figures, then put (\checkmark) or (x):



9 Study the following two diagrams, then put (\checkmark) or (x):



١.	Both diagrams (A) and (B) show two food webs.	(
2.	In diagram (B), both of seabirds and sharks are secondary consumers.	(1
3.	In diagram (A), if small fish are removed, the seabirds are negatively		
	affected.	(1
4.	There is a food relationship between seabirds and sharks, where each of		
	them can eat the other.	(1
5.	In diagram (B) if sharks are removed, the seabirds population may be		
	decreased.	(1

LESSON THREE

Activity 7 Habitat Loss

▶ Put (√) or (x):

- A healthy habitat should provide living organisms with air, food, water and shelter to survive.
- Living organisms are not affected if their habitat get destroyed.

Habitat loss

- Habitats provide organisms with all the things they need to survive.
- · Some human activities can change the habitats in an ecosystem such as :
 - Building up more buildings and roads.
 - Throwing waste materials in water.
 - Overfishing in seas and oceans.
- · Human activities can also impact the weather and nonliving factors in an ecosystem, such as the temperature of ocean water.
- All of these changes can cause habitat loss which is one of the main causes of extinction.

Why are healthy habitats important to all organisms in a food web?

- Because they provide organisms with resources that they need to survive as air, food, water and shelter, so if each species gets its needs to survive, there will always be enough food for each organism in the food web.
- · When these habitats are destroyed, different organisms may not be able to survive and this will negatively affect the flow of energy in the food web.
- Now, we will study an example of habitat loss in a coral reef ecosystem.

Coral reefs

- Coral reefs are some of the most diverse and valuable ecosystems on Earth.
- Coral reefs are important habitats for living organisms as coral reefs provide food and shelter for large numbers of fish, corals and other marine organisms.
- They are important for tourism, where people travel to coral reefs for fishing or diving. This help increase the visitors and income of local hotels, restaurants and other businesses.





حيوان المرجان ڏو فيمة

الزئرين

الفنادق المحلبة local hotels tourism business

السياحة شركات

Unit 1 | Concept 3



Corals are small marine animals that live in coral reefs ecosystems.



Coral bleaching

Coral reefs bleaching happens when the water temperature rises, where :

When the water is very warm, coral reefs will get rid of the algae living in their tissues.



This causes the coral reefs turn completely into white.



As a result of coral reefs bleaching, corals often do not survive.



Coral reefs bleaching

▶ How might the loss of coral reefs change the ocean food webs?

Destroying of coral reefs causes:

- Fish and other marine organisms that depend on coral reefs for food and shelter may die or move to another habitat.
- People that depend on coral reefs and fish for food will be negatively affected.



Check your understanding

▶ Put (√) or (x):

- Coral bleaching happens when the temperature of seawater decreases. (
- 2. Habitat loss is not considered from causes of extinction. ()
- 3. From human activities that change the habitats in an ecosystem is overfishing in seas.()

Activity 8 Plastic Pollution

You have learned from the previous lessons that human activities may negatively affect the environment as the impact of throwing plastics in the marine environments.

The effect of plastic products on marine life

Plastics in the sea affect marine life, where whales, sea turtles, seabirds and fish cannot often differentiate between real food and plastic.

Examples:

1 How do sea turtles get harmed by feeding on plastic?

- Sea turtles cannot differentiate between
 a jellyfish and a piece of plastic in the water.
- Therefore, sea turtles eat a lot of plastic thinking that it is jellyfish, so sea turtles get harmed.



2 How do corals get harmed by feeding on plastic?

- Plastic products get broken down into smaller pieces called microplastics (smaller than a grain of rice).
- When corals filter the seawater to get their food, they ingest these microplastics that are as small as the pieces of food that corals get from the water, so corals get harmed.



Notes

- A large quantities of plastic are thrown into the marine environment every year, most of them come from land.
- Plastics are very harmful to marine organisms because they are toxic and sharp.
- 3. If the amount of plastic in the sea or ocean increases, plastics will harm marine habitats and affect the organisms that live in the sea or ocean.
- People can decrease their use of plastic products or recycle them instead of throwing them in the sea.

Check your understanding

In the Assessment Book : Try to answer : Self-Assessment (12)

Put (√) or (x):

- When the amount of plastic increases in the sea, the number of marine organisms increases.
- 2. Plastics are very harmful to marine organisms as they are toxic and sharp. ()

Exercises on Lesson 3

Understand

O Apply

Higher Thinking Skills

1	CI	noose the correct answe	r:			
•	1.	Healthy marine environr	nent is impo	ortant for survival	of	
		a. humans. b. lions		c. fish.	d. deers.	
-	2.	All the following are hea	Ithy resourc	es for marine foo	d webs, except.	
		a. clean water and food.		b. clean food and	shelter.	
		c. clean shelter and wat	er.	d. polluted water,	food and shelter	-
ė	3.	When the marine habita	ts are destr	oyed, the number	of living organis	sms in
		their food webs is				(Cairo 2024)
		a. increased. b. decr	eased.	c. not changed.	d. doubled.	
	4.	All the following may oc				
		a. increasing of populati		b. decreasing of p		
		c. extinction of some org		d. decreasing of r	esources.	
	5.	Coral reefs are consider				(Alex. 2024)
		a. insects. b. bact	eria.	c. ecosystems.	d. fungi.	
•	6.	When water temperature become bleached.	e increases	, algae leave tissu	ies of, so	they
		a. seabirds b. cora	l reefs	c. clam	d. sharks	
-	7.	As a result of coral reefs	bleaching,	corals will		
		a. increase. b. enla	rge.	c. survive.	d. die.	
9	8.	Plastic waste materials except	cause all the	e following to the	marine environn	nent,
		a. break down in food w	ebs.	b. pollution of wat	er.	
		c. increasing of populati	on.	d. decreasing of p	opulation.	
-	9.	Both of sea turtles and .				ain.
		a. deers b. jellyl	īsh	c. eagles	d. tigers	(Cairo 2023)
•	10.	When corals the s	seawater, th	ey may ingest mi	croplastics.	(Minia 2023)
		a. evaporate b. filter		c. cool	d. warm	
	11.	Corals are negatively af a. rising water temperat b. ingesting microplastic c. Both of rising temperat	ure only. s only.		tics.	
		d. neither rising of temp	erature nor	ingesting micropla	astics.	

2	Put (✓) or (X):		
ĺ	1. Healthy habitats provide living organisms with clean air, healthy foo	d	
	and water. (Beni Sue)
Į	2. The flow of energy in food webs is not affected when the natural hal	bitats	
	are destroyed.	()
-	3. Human activities impact the nonliving factors in an ecosystem.		-
	(Menoufic	a 2024) ()
•	4. Healthy coral reefs have no benefit to fish but they are important for		-
	tourism,	()
	5. When the temperature of seawater decreases, coral reefs receive mo	re	
	algae. (Alex	. 2023) ()
1	6. Coral bleaching occurs as a result of throwing plastic in seawater.	()
		(Cairo 20	23)
1	7. Living organisms in seas and oceans cannot differentiate between		_
	real food and plastic waste materials.	()
Ī	8. Jellyfish can get its energy by eating the sea turtle.	()
1	Corals filter the seawater to get their needed food.	()
3	Write the scientific term of each of the following:		
•	1. It is a condition in which coral reefs turn completely into white.		
	(Kafr El-Sheikh 2024) (f)
ĺ	2. Small pieces of plastics in the size of rice grains and they cause han	*	
		* [***********************************)
ļ	3. Marine ecosystems that provide food and shelter for corals, fish		
	and other marine organisms.	[)
1	Complete the following sentences using these words :		_
ľ	(extinction – overfishing – shelter – toxic – predator)		
1	1. Healthy natural resources include clean air, healthy food, water and		
	suitable	(Giza 20)	23)
1	2. The human activity that directly decreases the marine population is .		
		(Giza 20)	23)
]	3. Habitat loss is not only decreasing marine population but also it is or	ne of the	
	main causes of		
1	The vention a sea turne cats a jenynsh, this means that the sea turne is a .		

	5. Plastic waste materials are	e very harmful to marine organis	sms, because they
	are and sharp.		(Giza 2023)
5	Give reasons for :		(Gharbia 2023)
	1. Coral bleaching happens v	when the water temperature rise	es.
	2. Plastics are very harmful to	o marine organisms.	(Cairo 2024)
6	What happens if?		(Menoufia 2024)
		validabė.	(Menouna 2024)
	Plastic products expose to su	uniignt.	

			"
7	Study the following figures,	then put (✓) or (X):	
1			
	Plastic products in water	Sea turtle	Jellyfish
	1. We can draw arrows betwe	een plastic products, jellyfish an	d sea turtle to design
	a food chain.		. ()
	2. The sea turtle can different	tiate between plastic and jellyfis	h. ()
	3. Both of jellyfish and sea tu	rtle are consumers.	()

LESSON FOUR

Activity 9 Record Evidence Like A Scientist

- In this concept, you have learned about changes in food webs.
- Now, try to think like a scientist by writing your claim, your evidence and your scientific explanation about one of the main points of this concept through the four steps you have learned in concept one.

? Step 1 The Question
What might happen to a food web when an organism or the environment changes within an ecosystem?
Step 2 My Claim
Step 3 My Evidence
Step 4) My Scientific Explanation

claim

Activity 10 Habitat Restoration

- You have known that environmental changes and human activities may negatively impact ecosystems.
- But, there are ways through which we can restore the habitat leading to a healthy and balanced ecosystem.
- Restoration projects allow scientists to find out better solutions for reducing the negative impacts of human activities.
- Human activities can cause big changes to the environment such as:

When many plants are removed, riverbanks erode, so floods may reach farther areas when wetlands are drained.



 Once harm occurs to the environment, scientists, engineers and citizens work on "Habitat restoration".

Habitat restoration :

It is the process of returning a habitat back to its natural state before harm was done.

The importance of habitat restoration projects

Habitat restoration projects try to repair all parts of the habitat, where they help prevent species from extinction by restoring the habitat (including the resources of food, water and shelter) to the way it was before its damage.

Rebuilding coral reefs

One example of restoring a habitat is "a coral reef rehabilitation project" that happens in the Arabian Gulf, where:

 Scientists collect small parts of different coral species and then move them to a "nursery".



Coral reefs

riverbanks

citizens

nursery

rebuilding

- Nursery is an area in the sea or ocean, where scientists take care of small pieces
 of coral until they grow up and can be moved back to the reefs where they were
 dying.
- The healthy coral can continue growing and reproducing to make a new coral reef again.

Protecting coral reefs from plastic pollution

In Egypt, coastal communities near the coral reefs use a new way of life known as "zero plastics", where people in these communities decrease using of one-use plastic products.



Coral reefs



A habitat is not restored.

Many species in this habitat may be lost, because they cannot get their needs to survive.

1

Check your understanding

▶ Put (√) or (x):

- Human activities can't cause changes in the environment.
 ()
- Habitat restoration means returning a habitat back to its natural state before harm was done.
- 3. People should not throw plastic waste into the sea. ()

Review on Concept [1-3]

To review this concept look at the **Assessment Book** "Part 2: Final Revision".

In the Assessment Book:

Try to answer:

- Self-Assessment (13)
- Model Exam on Theme (1)

Exercises on Lesson 4

Understand

O Apply

Higher Thinking Skills

1	C	Choose the correct answer:		
	1.	 Which of the following human activities does Throwing plastic products in water. Leakage of oil into water. Overfishing and damaging of coral reefs Recycling of plastic products. 		
	2.		s to that occur to an ecosystem rease harms ease damages	
	3.	Removing plants in an ecosystem negative a. water. b. sun!	rely impacts (Qalyoubia 2023))
	4.	4. The place in which we can take care of sn is located in	(Cairo 2024))
	5.	5. The area in which the scientists take care up is known as	erts. d. forests. of small pieces of coral until they grow (Cairo 2023, ssland. d. nursery.	
	6.	6. All the following processes show coral ree process.a. growingb. bleachingc. representation		
	7.	7. "Zero plastics" project that is applied in Eg that the using of plastic products decrease a. 0% b. 10% c. 90%	gyptian coastal communities, means es by	
2	Pt	Put (✓) or (X):		
	2.	 Removing plants negatively affects consur Restoration projects are used to find out s It is better to keep natural resources health projects on them. 	olutions for increasing pollution. () hy instead of applying restoration)
		Citizens must share in returning a habitat before harm was done. Nurser is the pattern habitat in the see in.	())
Ī	٥.	5. Nursery is the natural habitat in the sea, in corals until they grow up	which scientists take care of	

3	Write the	scientific te	rm of	each of	the	following
---	-----------	---------------	-------	---------	-----	-----------

- A process of returning a habitat back to its natural state before harm was done.

 (......)

4 Complete the following paragraph using these words:

(dying - grow up - bleaching - nursery)

We can protect coral reefs from by transferring corals into in the sea, where scientists take care of corals until they and then moved back to the reefs to continue growing where they were

5 Give a reason for the following:

When we remove plants from riverbanks, the floods become more dangerous.

Study the opposite figure, then choose the correct answer :

This figure shows

- a. energy transfers from mushrooms to dead plant.
- b. energy transfers from dead plant to mushrooms.
- c. oxygen gas transfers from air to dead plant for breathing process.
- d. carbon dioxide gas transfers from air to dead plant for photosynthesis process.



Choose what happens if we cut down a large number of trees in a forest?

	Carbon dioxide gas in air	Riverbanks	Flooding
a.	decreases	erode	increases
b.	decreases	increase	decreases
C.	increases	erode	increases
d.	increases	increase	decreases

Model 1 Exam

On Concept (1.3)

Total	mark
1	5

(A) Choose the correct answer:		(5 marks)
1. All the following factors pollute the	water, except	
a. plastic garbage.	b. sunlight.	
c. animals wastes.	d. humans wastes.	
2. In a food chain, the energy transfe	ers	
a. from a consumer to a producer.	b. from a predator to a producer.	
c. from a predator to a prey.	d. from a prey to a predator.	
3. Seabirds build their nests		
a. on the water surface.	b. deep down into the sea.	
c. on the top of mountain cliffs.	d. deep down into the river.	
4. As a result of coral reefs bleaching	g, corals will .	
a. increase.	b. enlarge.	
c. survive.	d. die.	
(B) What happens if?		
The number of secondary consum	ners in an ecosystem decreases.	

(A) Put (✓) or (X):		(5 marks)
1. People can recycle plastic produc	ts instead of throwing them in the sea	ı. ()
2. Microorganisms that live in water in	crease when the water becomes warm	er. ()
3. Some marine organisms depend	on coral reefs for food and shelter.	()
4. Tigers are considered as top pred	ators in marine food chains.	()
(B) Give a reason for the following:		
Coral bleaching happens when th	e water temperature rises.	
		r

3	(A) Write the scientific term of each of the following:	(5 marks)
	1. It is an area in the sea, where scientists take care of small pieces	
	of coral until they grow up.	()
	2. Small pieces of plastics in the size of rice grains and they cause	
	harms to the coral reefs.	()
	3. It is the number of organisms of one type of species living in an area.	()
	4. It is harm that happens to the water due to human activity.	()
	(B) Correct the underlined words :	
	1. Due to rising of water temperature, coral reefs turn completely into	
	green.	()
	2. If the number of secondary consumers increases, the amount of	
	producers in this ecosystem will decrease.	()

Model 2 Exam 2

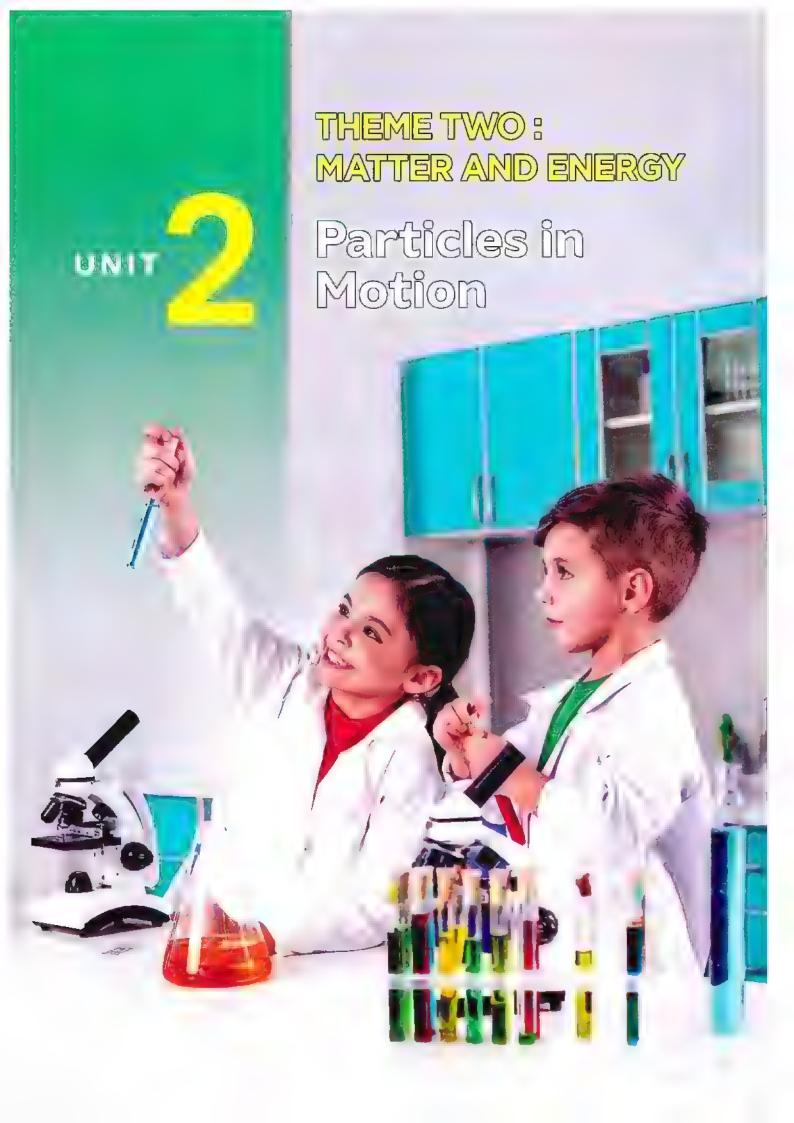
On Concept (1.3)

Total	mark
1	5

1	(A) Put (✓) or (X):		(5 marks)
	1. If the climate change is suitable, t	the population of a species will decrea	se.()
	2. Corals can make their own food b	by photosynthesis process.	()
	3. Overfishing is a human activity th	at can change the habitat in a marine	
	ecosystem.		()
	 It is better to keep natural resource projects on them. 	ces healthy instead of applying restora	tion
	(B) Give a reason for the following	:	, ,
	Change in the population of one species.	species affects the population of other	
2	, ,	from a marine ecosystem, the survival	(5 marks) of
2	If clams are completely removed may be affected.	from a marine ecosystem, the survival	
2	If clams are completely removed may be affected. a. sharks		
	If clams are completely removed may be affected. a. sharks c. tiggerfish	b. sea urchin d. sea stars	of
	If clams are completely removed may be affected. a. sharks c. tiggerfish	b. sea urchin	of
	1. If clams are completely removed may be affected. a. sharks c. tiggerfish 2. Habitat restoration projects allow	b. sea urchin d. sea stars scientists to that occur to an eco	of
	1. If clams are completely removed may be affected. a. sharks c. tiggerfish 2. Habitat restoration projects allow a. increase harms c. keep harms	b. sea urchin d. sea stars scientists to that occur to an eco b. decrease harms	of system.
	 If clams are completely removed many be affected. a. sharks c. tiggerfish Habitat restoration projects allow a. increase harms c. keep harms Any increase or decrease in the restoration 	b. sea urchin d. sea stars scientists to that occur to an eco b. decrease harms d. increase damages	of system.
	 If clams are completely removed means are affected. a. sharks c. tiggerfish Habitat restoration projects allow a. increase harms c. keep harms Any increase or decrease in the reknown as 	b. sea urchin d. sea stars scientists to that occur to an eco b. decrease harms d. increase damages number of organisms of one type of sp	of system.
	 If clams are completely removed	b. sea urchin d. sea stars scientists to that occur to an eco b. decrease harms d. increase damages number of organisms of one type of sp b. an ecosystem.	of system. ecies is
	 If clams are completely removed	b. sea urchin d. sea stars scientists to that occur to an eco b. decrease harms d. increase damages number of organisms of one type of sp b. an ecosystem. d. adaptation.	of system. ecies is

(B) What happens to?	
	The coral reefs when the seawater temperature rises.	

3	(A) Complete the following sentences using these words:	(5 marks)
	(microorganisms – small fish – preys – primary consumers)	
	1. Producers in the marine food chains, are	
	2. Small fish are considered as , when they eat the producers.	
	3. Seabirds feed on to get energy.	
	4. Predators of living organisms may be for other living organisms.	
	(B) Cross out the odd word:	
	1. Tiger - Rabbit - Lion - Crocodile. ()
	2. Insects – Trees – Algae – Grasses. (·····)



Get Started

What I Already Know



In the previous years, you have learned that matter can be found in three states which are solids, liquids and gases.







Picture (1)

Picture (2)

Picture (3)

- ▶ When observing the pictures above that show different volcanoes, you can find the three states of matter, where :
 - Picture (1) shows gases come out of a volcano.
 - Picture (2) shows lava which is a liquid state of matter that comes out during a volcanic eruption.
 - Picture (3) shows volcanic rocks which are solid state of matter. These rocks are formed when lava cools down.

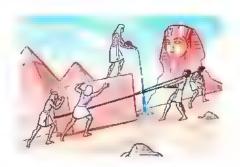
In this unit, you are going to study :

- Matter is composed of very small particles.
- The properties of particles of solids, liquids and gases.
- How to identify, describe and measure matter.
- Physical changes and chemical changes of matter.

▶ Unit Project : "Slippery Sand":

At the end of this unit, you will make a research project about how the ancient Egyptians mixed sand with water to move the large beavy blocks of stones across

water to move the large heavy blocks of stones across the desert sand to build the pyramids.







Learning outcomes

By the end of this concept, your child will be able to:

- Communicate the defining characteristics of the three states of matter.
- Explain how changes in states of matter result in changes to the movement of the particles within matter.
- Develop models of particles of matter in different states.

Key vocabulary

Gas

- Liquid

Mass

Matter

Model

Particle

Property

Solid

State of matter



On Concept [2.1]

Lessons	Activities	What you should do with your child
a	Activity 1	Discuss with your child the three states of matter on Earth.
1	Activity 2	Discuss with your child that the water found in three states solid, liquid and gas.
_	Activity 3	Explain to your child how to describe the three states of matter.
2	Activity 4	Discuss with your child the differences between particles in each state of matter.
	Activity 5	Explain to your child that any matter is made up of very tiny particles.
3	Activity 6	Explain to your child how modeling the particles of matter.
	Activity 7	Discuss with your child how particles of any matter are very tiny.
4	Activity 8	Discuss with your child the importance of models.
4	Activity 9	Explain to your child the arrangement of particles in each state of matter.
5	Activity 10	Help your child to think like a scientist by answering a question about one of the main points of this concept, then write his/her claim, evidence and the scientific explanation.
	Activity 11	Discuss with your child how we use the three states of matter to prepare and cook food.

LESSON ONE

Activity 1 Can You Explain ?







- ▶ The pictures above show different matter such as waterfall, buildings and mountains.
 - Everything around us is made of matter.
- ▶ What are the different forms of matter can be found in the world around us?
 - Matter is found in three main forms (states), which are :
 - Solid: such as ice, wood, stone, iron, etc.
 - Liquid : such as water, oil, milk, gasoline, etc.
 - Gas: such as water vapor, oxygen, carbon dioxide, etc.
 - To describe any matter, you should study its properties such as shape, volume (size), color, texture, hardness, temperature etc.
 - Any matter is made up of tiny things that we cannot see with our eyes.
 - · Generally, matter can be defined as follows:

Matter:

It is anything that has a mass and takes up space.

₩ Note

Any matter takes up space means that this matter has volume.

In this concept, we will study:

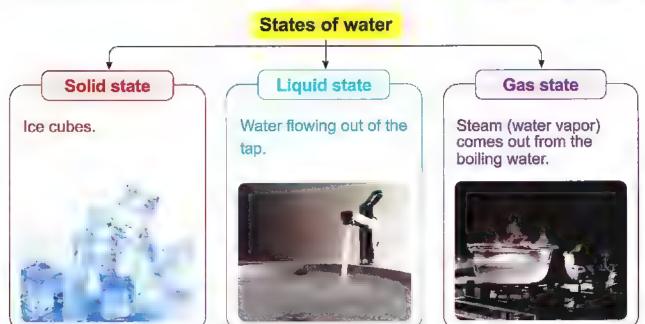
- · States of matter.
- Particles of matter.
- · Modeling the particles of matter.
- · Tiny particles size.
- Models help us look at things.

Activity 2 States of Water

▶ Look at the opposite picture, then put (√) or (x):

- Ice cubes are considered the liquid state of water.
- Water is found on Earth in the liquid state only.
- Now, let's study the three states of water as an example that shows the three states of matter.





From the previous explanation, we can observe that:

- Water can be found in the three states of matter.
- 2. Water can be changed from one state into another.

Check your understanding

▶ Put (√) or (x):

- Steam that comes out of a hot cup of tea is considered the liquid state of water.
- Water is found in three states on Earth.

In the Assessment Book : Try to answer : Self-Assessment (14)

Exercises on Lesson 1

	• Und	derstand	O Apply	•	Higher Thinking Skills		
1	Choose the c	orrect answer :					
	1. Matter can	be found in	states.			(Cairo 20	024)
	a. 2	b. 3	C.	6	d. 7	,	·
	2. Water can	be found in a so	olid state in	the form of	f		
					d. boiling wat	er.	
	3. An example	e of a gas is				(Giza 20	023
	•	e. b. rock.		pencil.	d. oxygen.		, _ 0,
	4. The amour	nt of space that					
	a. volume.	•	C.	•			
		substances are		J		(Cairo 20	023
İ	a. oil.				d. vinegar.	(Odno 20	120)
		and have			_	(Giza 20	0041
Ī					ilk d. wood – pla	·	124
1	a. Wood	vator 5. pidotio	0		d. wood pio		
2	Choose from	column (B) who	at suits it in	n column (A	A):		
Ī		(A)			(B)		
	1. Carbon di	oxide		a. is not a	a matter.		
	2. Sand			-	uid matter.		
	3. Gasoline			c. is a gas			
				u. is a sui	id matter.		
	1	2	Mill de la mara na la late de la facilità de la mara la esta.		3		
8	D-+ / 4) -11/20						
3	Put (✓) or (X)					4	
		idered a solid st				x. 2024) (
		er changes from				()
Ť	3. Volume is t	the space that is	taken up l	oy a matter	r.	()

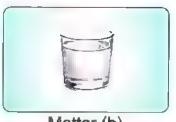
4. Any matter is made of tiny particles.

5. The gas state of water is steam.

(Cairo 2023) (

ř	Write the scientific term of each of the following:	
	1. Anything that has mass and volume.	(Alex. 2023) (
	2. The state of water after its boiling.	(
	Complete the following sentences :	
	1. States of matter are and liquid.	
	2. Iron and gold are examples of state of ma	atter. (Dakahlia 202
	3. The state of an ice cube is, while the state is	te of the air we breathe
	4. Any matter takes up space means that it has	(Mınia 202
	Cross out the odd word :	
	1. Oil – Milk – Water – Wood.	(Beni Suef 2023) (
	2. Plastic - Vinegar - Iron - Aluminium.	(
	3. Coal – Carbon dioxide – Oxygen – Air.	(Damietta 2023) (
	Give a reason for :	
	Salt is a matter.	(Cairo 202
	······ ··· ··· ··· ··· ··· ··· ··· ···	
al	What happens to?	
	The state of water after it is heated in the kettle for few	v minutes.
1		





Matter (b)

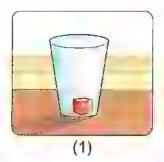
- 1. Matter (b) can change into matter (a).
- 2. When we boil matter (b), it changes into liquid state.

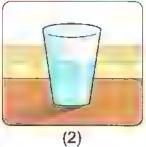
LESSON TWO

Activity 3 Observing Matter

▶ Look at opposite pictures, then put (√) or (x):

- In cup (1), the wooden cube has fixed shape.
- In cup (2), water doesn't take space inside the cup. (

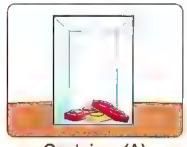




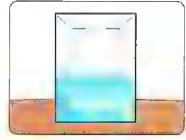
In this activity, we will do an experiment to show how to describe the three states
of matter (solid, liquid and gas).

Tools

Three glass containers (A), (B) and (C).



Container (A) contains plastic cubes



Container (B) contains some water



Container (C) contains steam

Step

Observe the properties of the contents of each container.

Observations

In container (A), the plastic cube (solid) has definite (fixed) shape and volume.

In container (B), the water (liquid) has no definite shape but it has defin to volume.

In container (C), the steam (gas) has no definite shape and volume.

definite موية wooden خشبي container وأضح/معدد 139



Conclusions

· Solids:

They have definite (fixed) volume and shape.

· Liquids :

They have definite volume but they don't have definite shape.

· Gases:

They have no definite volume and shape.

Note

Some gases can't be seen such as air, but:

- You can see air moving when the wind blows and moves some objects.
- You can see a balloon gets larger when you blow air into it.

Check your understanding

-	1 60			
Di it	$I \cup I \cap$	or	(W)	
гыс			(~)	

- Liquid matter has definite shape.
 ()
- 2. Gases have no definite volume and shape. ()

Choose the correct answer:

1. matter has definite shape and definite volume.

2. and take the shape of their containers.

(Solids, liquids – Solids, gases – Liquids, gases)

Activity 4 Matter



- All matter are made up of very tiny things (particles) that we cannot see with our eyes.
- Particles of all matter are in continous motion.



Some matter are too small to see with human eye such as air and germs, but they are also made up of tiny particles.



Germs

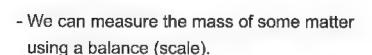
States of matter

The following table shows the difference between the particles and shape in each state of matter:

Solids	Liquids	Gases	
Particles :	Particles :	Particles :	
They are very close to each other (packed tightly).	They have more spaces.	They have a lot of spaces.	
They have less energy.	They have more energy.	They have a lot of energy.	
They move only a little bit.	They can move more freely.	• They move very freely.	
Shape and volume :	Shape and volume :	Shape and volume :	
They have definite shape and volume.	They don't have definite shape but they have	They don't have definite shape and volume.	
 Their shape doesn't 	definite volume.	They completely fill their	
change unless something is happening to change them.	They take the shape of their containers.	containers and take their shapes.	

Measuring and observing matter

- · Some properties of matter can be measured such as :
 - We can measure the length of some matter using a ruler or a measuring tape (tape measure).





Measuring tape



Balance



Thermometer

- We can measure the temperature of some matter using thermometer.
- ▶ From the previous explanation,we can determine the state of matter by :
 - 1.Describing the properties of matter.
 - 2. The motion of particles of matter.

O Notes

1. Matter can change from one state to another state such as :



- There are some things that are not matter such as light and sound which are forms of energy.
- 3. If there are two objects, they cannot take up the same space at the same time.

Check your understanding

Þ	Put	(√)	or	(x) :	
	1. A	ny n	natl	er	is	r

Any matter is made up of tiny particles. (
 Liquids have definite shape. (
 We can measure the length of some matter using thermometer. (

▶ Choose the correct answer:

1 matter co	impletely fill their containers	S.
a. Liquid	b. Gas	c. Solid
2. Particles of	have a lot of spaces.	
a. solid	b liquid	e nas

In the Assessment Book : Try to answer : Self-Assessment (5)

Exercises on Lesson 2

Understand

Apply

Higher Thinking Skills

4	Cl	noose the correct answer:			
	1.	Liquids have definite, but th a. volume-shape c. shape-volume	eir is not de b. color-volume d. color-shape	finite.	
	2.	Both and are solids as	s they have definite	e shape and vol	ume.
l		a. wood-oxygen c. wood-iron	b. milk-iron d. milk-oxygen		(Assiut 2024)
	3.	One of the substances that doesn't a. oil. b. coin.	t take the shape of c. gasoline.		
	4.	Both and take the sha a. air-plastic b. water-air	•		(Alex. 2024) ic
	5.		volume. b. no definite-no d. no definite-de		
1	-	Destales of the second second second			
Ĭ	Ο.	Particles of are very close to a. gold b. steam		d. oxygen	(Cairo 2023)
ļ			c. milk ances have a lot of	energy, except	
	7.	a. goldb. steamParticles of all the following substa	c. milk ances have a lot of . c. oxygen. a matter.	energy, except d. plastic.	
	7. 8.	a. goldb. steamParticles of all the following substatea. water vapor.b. carbon dioxideThe shape of is fixed as it is	c. milk ances have a lot of c. c. oxygen. a matter. c. air – gas	energy, except d. plastic.	
	7. 8. 9.	a. gold b. steam Particles of all the following substate a. water vapor. b. carbon dioxide The shape of is fixed as it is a. gold – liquid b. water – liquid Oil takes the of its container	c. milk ances have a lot of c. c. oxygen. a matter. c. air – gas c. color a container to ano	energy, except d. plastic. d. gold – solid d. mass ther one that has volume will of change.	(Cairo 2023)
	7. 8. 9.	a. gold b. steam Particles of all the following substatate. water vapor. b. carbon dioxide. The shape of is fixed as it is a. gold – liquid b. water – liquid. Oil takes the of its container a. volume b. shape. If we pour an amount of milk from different shape, so the shape of ma. change – change.	c. milk ances have a lot of c. c. oxygen. a matter. c. air – gas c. color a container to ano ilk will and it b. not change – n d. not change – o	energy, except d. plastic. d. gold – solid d. mass ther one that has volume will ot change. hange.	(Cairo 2023)

Choose from column (B) what suits it in column (A):

Column (A)	Column (B)
1. Milk	a. its particles are packed tightly.
2. Air	b. its particles have medium energy.
3. Wood c. its particles move very freely.	
	d. its particles don't move at all.

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2.

3.

	3 Put (✓) or (X) :				
	1. All forms of matter have volume.	()			
	 2. Liquids don't take the shape of the container that they are 	placed in. ()			
	3. Both gold and milk have definite shape.	(Sohag 2024) ()			
	4. Gases keep their shape and volume whatever the contain	ner changes. ()			
	5. While transferring water from one pot to another, its volun	ne will change. ()			
	6. Particles of water can move more freely than the particles	of water vapor.			
		(Menoufia 2024) ()			
	7. Particles of all matter are in a continuous motion.	()			
	8. Light and sound are forms of matter.	(Cairo 2024) ()			
4	9. Liquid particles move freely more than solid particles.	(Beheira 2024) ()			
	10. Gasoline takes the shape of its container.	()			
	11. Two equal amounts of sugar and salt cannot take up the s	same space at the			
	same time.	()			
2	Write the scientific term of each of the following:				
	1. The state of matter that has definite volume and shape.	(
		,			
	2. The state of matter that is characterized by having a definite volume but it doesn't have a definite shape. (
	3. Substances that take the shape and the volume of their co	,			
•	4. The state of matter that has a lot of spaces between its pa				
ı	5. The tool used to measure the length of a wall. (Dami	,			
t,	6. The tool used to measure the temperature of some matter				
ŀ	Complete the following sentences :				
•	1. States of matter are and gas.	(Fayoum 2023)			
•	2. In the matter, the volume and shape don't chang				
,	3. Water is a matter in state, while water vapor is a ma				
	4. Matter that takes the shape of its container, but its volume	_			
	is	(Beni Suef 2023)			
C.	5. We can measure the of a pen by using a ruler.				
	6. Particles of matter are very close to each other.	(Sohag 2024)			
	7. Any matter is made up of tiny that we cannot see	-			
1	The shape of matter doesn't change unless som to change it.	ething is happening			
	to change it.				
	9. Particles of matter have a lot of energy and space	ces. (Sohag 2024)			

←--->

6 Give reasons for :

1. Sugar is a solid matter.	(Cairo 2023)
-----------------------------	--------------

- 2. Wood has definite shape and volume.
- 3. Oxygen has no definite shape or volume. (Gharbia 2023)
- 4. Particles of a piece of iron are very close to each other.

Water has different shapes when it is placed in some containers that have different shapes.

What happens to ...?

- The shape of water if we put three equal amounts of water in three different containers.
- 2. The volume of a coin if we move it from a cup to another cup.
- 3. The shape of water if it changes into ice.
- Study the following figures that represent particles of three states of matter, then put (🗸) or (X):

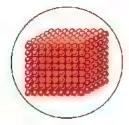


Figure (1)

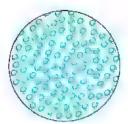


Figure (2)

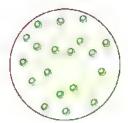


Figure (3)

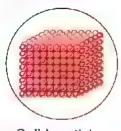
- 1. Figure (1) represents solid matter. (
- 2. Figure (2) represents liquid matter. ()
- By increasing the spaces between the particles of figure (2), this matter changes into solid state.
- 4. Particles of figure (1) have more energy than particles of figure (3).

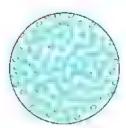
LESSON THREE

Activity 5 Particles of Matter

▶ Look at the opposite pictures, then put (√) or (x):

- Particles of solid are packed closely together than particles of liquid.
- Particles of solid take the shape of their containers.





Solid particles

)

Liquid particles

You have learned that any matter is made up of tiny particles that we cannot see with our eyes, where :

- Particles are known as "the building units of matter".
- Normal microscopes help us see some particles of matter.
- Different kinds of matter are made of different kinds of particles such as :
- Particles of gold are different from particles of iron.
- Particles of water are different from particles of milk.
- Now, let's study different kinds of particles.

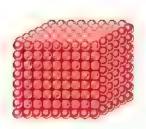


Microscope

Particles of solids

Particles of solids are closely packed (arranged) together and this leads to:

- Solids keep their shape.
- When they vibrate or move around their places,
 these particles are held together, so each particle
 cannot move separately from one place into another.
- They cannot slide over each other so, they can't take the shape of their containers.



Solid particles

Particles of liquids

Particles of liquids are held together more loosely than particles of solids and this leads to :

- They move faster than solid particles.
- They can slide over each other so, they take the shape of their containers.



Liquid particles

Particles of gases

Particles of gases are not held together and this leads to :

- They move very quickly in all directions.
- They can spread out to fill up any container they are put in.



Gas particles



Check your understanding

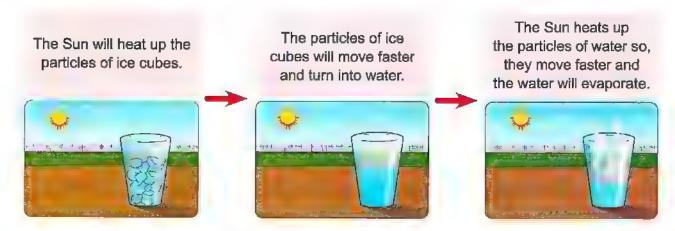
▶ Put (√) or (x):

- 1. Particles of solids can move freely from one place to another. ()
- 2. Liquid particles move faster than solid particles. ()

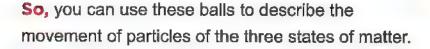
ينتشر spread يملئ directions الجاهب fill up

Activity 6 Modeling the Particles of Matter

▶ When a cup of ice cubes placed on a table exposed to the Sun in a hot summer day:



- Using models is a way to study some scientific concepts easily and can make ideas more clear.
- To make a model of particles that make up a matter, you can use ping pong balls as they are three dimensional units and can be separated from each other.





Ping pong balls



Check your understanding

- Choose the correct answer:
 - 1. When you heat a solid matter, the movement of its particles

(becomes slower - becomes faster - doesn't change)

2. If you heat a liquid matter, it will change into matter.

(liquid - solid - gas)

Activity 7 Tiny Particle Size

Tiny particles size

- · The size of particles depends on :
 - 1. The type of particles.
 - How particles connect with each other.
- The average size of a particle is so tiny, where one of your hairs is about 150,000 to 300,000 particles.

How can we see tiny particles?

 Scientists cannot use normal microscopes to see tiny particles because they are not powerful enough to see them.

So, they use a special microscope called electron microscope to see one tiny particle such as (one blood cell).



Blood cells under a microscope



Electron microscope

▶ How can we show that particles exist?

 To show that the invisible particles are really exist, we can use a gas matter such as air which is made up of invisible tiny particles as follows:

When you blow up a balloon

- The particles of air inside the balloon move very quickly.
- The particles of air hit and bounce off the balloon from inside, so they produce a force that inflates the balloon and gives it a round shape.

When you squeeze a balloon

- The particles come close together so, the balloon becomes smaller.
- If you squeeze more on the balloon, it will pop and the particles of air inside the balloon will escape out into the air.





Check your understanding

Put (√) or (x):

- To see the components of a tiny particle, we need electron microscope. (
- 2. When you blow up a balloon, the air particles inside the balloon move very quickly.

in the Assessment Book: Try to answer: Self-Assessment (16)

average **axist** powerful bounce

متوسط قوي

يرتد/ بنعكس

invisible squeeze components

escape

inflate غير صرئي يصغط hit مكونات DOD

بهرب

يصطدم يفرقع / ينفجر

blood cells enough round

خلايا لدم كافي دائري

Exercises on Lesson 3

Understand

O Aregioly

Higher Thinking Skills

1	Choose the correct answer :			
	1. By changing the of a m	atter, its state may change.		
	a. mass b. volume	c. color d. temperature		
	If water is exposed to high ter water may change into	mperature, its particles will move ar		
	a. faster – ice.	b. faster – water vapor.	iietta 20	023)
	c. slower – ice.	d. slower – water vapor.		
	3. We can use a model to study	•		
	a. solar system.	b. germs.		
	c. microbes.	d. viruses.		
	4. By blowing up a balloon,	**		
	a. its volume decreases.	b. its volume increases.		
	c. its color changes.	d. its mass doesn't change.		
	5. To examine the structure of tire type of	ny particles of a matter, we can use a spe	cial	
	a. microscopes.	b. balances.		
	c. thermometers.	d. rulers.		
	6. Particles of vibrate arou	and their places.	Alex. 20	023)
	a. glass b. air	c. oxygen d. water		
, '	7. The movement of particles of	water is slower than that of		
	a. wood. b. plastic.	c. air. d. gold.		
3		zed by all the following, except that	1	
	a. its particles move faster tha			
	b. its particles move slower th	•		
	c. its particles can slide over e	each other. er more closely than solid particles.		
		——————————————————————————————————————		
	Put (✓) or (X):			
		ms that can be seen with the naked eye.	()
2. Ping pong balls can be used to make a model of particles as they are				
	three dimensional units.		()
	3. Air particles are visible as they	/ are very large particles.	()
				151

Unit 2 | Concept 1

	 By squeezing a balloon, the space that the gas particles can occupy will decrease. 	()
	5. The type of particles affects their size.	()
•	6. Liquid particles move freely more than solid particles. (Giza 2023)	ì)
	7. Some particles of matter can be examined by normal microscopes.	(ì
•	8. The speed of water vapor particles is slower than that of water particles.	(, }
•	particles of wood are different from particles of plastic.	1	١
Ī	5. particles of wood are different from particles of plastic.	1	,
9	Complete the following sentences using words below:		
	(quickly – normal – particles – high)		
1	1. Water evaporates when it is exposed to temperature.		
•	Scientists cannot use the microscope to see the components of blood cell.	one	}
-	3. Building units of a matter are known as		
	4. The particles of air inside the balloon move very		
4	Write the scientific term of each of the following :		
	The state of water after its heating for a high temperature.)
1	2. A device used to examine one tiny particle such as a blood cell. ()
•	3. A device used to examine objects that are too small to be seen with		
	the naked eye. (Qena 2023) (,a d d q d d a 1)
			_
5	Complete the following sentences:		
	When an ice cube is exposed to the Sun, the speed of movement of its particles will		
•	2. We can use ping pong balls to describe the movement of of the	thre	;е
	states of matter.		
	3. To describe the particles of a matter in state by modeling balls, should put the balls packed together.	we	
	4. Particles of liquid matter can move more faster than particles of		
	matter and more slower than particles of matter.		
•	5. Particles of matter can slide over each other, so they take the		
	of their containers. (Luxo	or 20	23)

6		ive re Using	
Ĭ	1.		

1. Using models to study some scientific concepts.

2. Sometimes we need to use an electron microscope.

3. Particles of gases can spread out quickly to fill up any container they are put in.

.....

4. Liquids take the shape of their containers.

(Qalyoubia 2023)

What happens to ...?

1. The speed of particles of an ice cube when it is exposed to the Sun.

2. The size of a balloon when you blow it up.

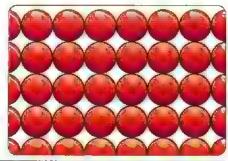
(Cairo 2024)

3. The speed of particles of liquid when it changes into gas.

(Alex. 2023)

Look at the opposite ball model that shows the particles of a matter, then complete the following sentences:

- 1. This model represents a substance in ... state.
- If we want to make changes in this model to make this matter in a liquid state, we should the distances between balls.



- Look at the opposite figures that represent the three states of matter, then complete the following sentences:
 - Matter in figure takes the shape of its container but its volume doesn't change.
 - 2. Particles of figure move faster than that of figure and figure
 - 3. Particles of figure are not held together.





Figure (A)

Figure (B)



Figure (C)

LESSON FOUR

Activity 8 Models

▶ Look at the opposite picture, then put (√) or (x):

- 1. This model represents the moon. (
- 2. This model help us see all of land and water areas on Earth at once.



Globe

Model

Model:

It is a copy that is similar to a real thing.

- Models help us understand things we cannot easily see.
- Models may be drawings, objects or ideas that represent a real event, object or process.
- Models look like, move like or work like what they copy.

How do models help us look at hig things?

Models can represent very big things in a smaller size, because it is hard to see them.

Now, let's study two examples of models for very big things.

Example (1): Earth:

- We cannot see all of Earth while we are standing on it because it is too big.
- A globe represents a model of Earth which shows us :
 - The shape of Earth.
 - How much of Earth is covered with water.
 - Where different countries are located.

Example 2: The solar system:

- Solar system is a very big place that consists of many planets such as Earth.
- · A model of the solar system helps us :
 - See all planets at once.
 - Compare between planets, which one is the biggest and which one is the closest to Earth.





Model of solar system

copy event locate يسخة globe خنث process وغن stand real نموذج للكرة الأرضية. countries عملية planets يقف حقیقی دول کواکب

How do models help us look at small things?

- Models can represent very tiny things in a bigger size, because it is hard to see them such as germs.
- Germs are spread around us which make us sick and we can only see them with a microscope.
- · A model of a germ helps us:
 - See the shape of a germ without microscope.
 - See different parts of germs which help them spread from one person to another.



Model of a germ

Models help us understand how things work

Example 1: A model of a volcano:

- · A model of a volcano shows us:
 - The shape of a volcano.
 - How the liquid that comes out of a volcano during a real eruption.



Model of volcano

Example 2: A model of an airplane:

A model of an airplane shows us how it flies up into the air.



Model of airplane

From the previous explanation, it is clear that models help us:

- Teach something about the real things they copy.
- · See and understand how things work.
- · Learn about many things at just the right size.
- Know what we could not otherwise see.

Check your understanding

▶ Put (√) or (x):

- 1. The globe shows where different countries are located. (
- To study germs we need to bring model of them in big suitable size. ()

sick spread otherwise eruption مریض volcano ینتشر حدیق ذلک

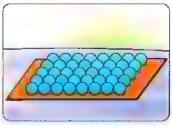
ٹوراں البرکاں

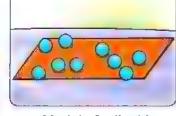
Activity 9 Modeling States of Matter

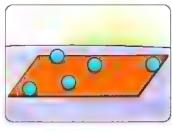
In this activity, we will observe three models that show the arrangement of particles in each state of matter.

Tools

Beads fixed by glue on three pieces of cardboard which represent the different arrangement of particles in each state of matter.







Model of a solid

Model of a liquid

Model of a gas

Step

Observe the three models of the three states of matter and the arrangement of particles in each state.

Observations

The arrangement of beads in:

- Model of a solid: Beads are close together and arranged in a regular pattern.
- Model of a liquid: Beads are little far from each other and not arranged in a pattern.
- Model of a gas: Beads are so far from each other and not arranged in a pattern.

Conclusions

The arrangement of particles in:

- Model of a solid: They have a regular pattern (organized).
- Model of a liquid: They have a random arrangement (not well organized).
- Model of a gas: They have a random arrangement (not organized at all).

Check your understanding

▶ Put (√) or (x):

- 1. Particles of gas matter are organized.
- 2. Particles of solid matter are close together and have a regular pattern. ()

In the Assessment Book : Try to answer : Self-Assessment 17

Exercises on Lesson 4

Understand

O Apply

Higher Thinking Skills

1	C	hoose the correct answer :				
	1.	The model of Earth shows how mu	ch of its surface is covered with			
		a. gasoline.	b. water.			
		c. milk.	d. animals.			
- 1	2. We can see all planets of the system including Earth by using					
		a model.				
		a. solar	b. digestive			
		c. respiratory	d. muscular			
	3.	Some liquids come out of a	during its eruption.			
		a. star	b. wooden piece			
		c. volcano	d. plastic piece			
-	4.	Particles of are organized ar	nd have a regular pattern. (Caire	202	23)	
ł		a. solids only	b. gases only			
		c. solids and liquids	d. liquids and gases			
•	5.	Gases differ from solids and liquids	s in that gases			
		a. can be poured.	b. fill any container they are put in.			
		c. have a definite shape.	d. have a definite volume.			
2	Pi	ıt (✓) or (X) :				
•	1.	Models don't help us understand th	nings that we cannot easily see			
		with our eyes.		()	
•	2.	Solar system contains only one pla	net which is Earth.	()	
•		Models help us understand ideas,		()	
•	4.	We can see the shape of a germ by	y using a special microscope.	()	
•		Most germs can spread around us		()	
•		A model of an airplane shows us he		()	
3	W	rite the scientific term of each of t	he following:			
·		A model of the whole Earth that is r	-			
	.,		()	
•	2.	A copy that is similar to a real thing	which we cannot observe it with our ey	es.		
			(Favoum 2023) ()	

4 Complete the following sentences: 1. Water vapor particles are loosely packed, so that water vapor do not have definite or 2. Earth is a planet in the system. 3. We can study the location of countries by using a which represents a model of Earth. 4. A model of a germ helps us see its shape without using a which is used to magnify tiny objects. (Suez 2023) 5. Liquids that come out of a volcano have definite but they have no definite Give a reason for : Scientists make models of germs. 6 What happens to ...? The arrangement of particles of water after its freezing. (Aswan 2023)

Look at the following figures that show three models of particles of some matter related to our planet Earth, then complete the following sentences:

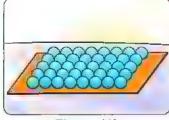


Figure (1)

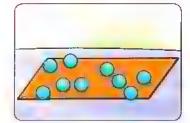


Figure (2)

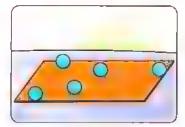


Figure (3)

- 1. Beads of figure could represent the particles of a rock on Earth's surface.
- 2. Beads of figure ... could represent the particles of river water on Earth.
- 3. Beads of figure could represent the particles of air that surrounds Earth.
- 4. By heating the particles of figure (2), they will be similar to that of figure

LESSON FIVE

Activity 10 Record Evidence like A Scientist

- ▶ In this concept, you have learned a lot about the three states of matter and the properties of each state.
- Now, try to think like a scientist by writing your claim, your evidence and your scientific explanation about one of the main points of this concept through the four steps you have learned in the previous concepts.

Step	1) The Question
What ar	e the different forms of matter that can be found in the world around us
Step (2 My Claim
111111111111111111111111111111111111111	
1444444	······································
Step	3) My Evidence
100000000000000000000000000000000000000	······································
Step	4 My Scientific Explanation
) (************************************	
	, ,

claim scientific explanation

evidenca فرضية تفسير علمي دىيل



Activity 11 S T M in Action

Careers and states of matter

We use the three states of matter to prepare and cook different types of food such as:

Solid matter	Liquid matter	Gas matter
• Rice.	Water.	Natural gas used in gas
• Pasta.	- Oil.	ovens.
• Frozen vegetables.	Vinegar.	Steam of boiling water.

Scientist chef

- · Chefs use science during preparing dishes.
- · Chefs use different states of matter to change ingredients such as:
- Boiling some water to cook pasta or rice, where water (liquid state) changes into steam (gas state).
- Freezing vegetables keep them fresh and ready to use for longer periods of time.
- Leave a cup of juice or milk in freezer to change from liquid state into solid state.





Check your understanding

- ▶ Put (√) or (x):
 - When we boil some water to cook pasta, it changes from solid state into gas state.
 - When we leave a cup of water in freezer, it changes into solid state.

Review on Concept [2-1]

To review this concept look at the **Assessment Book**"Part 2: Final Revision".

In the Assessment Book:

Try to answer:

- Self-Assessment (18)
- Model Exam on Concept (2.1)

Exercises on Lesson 5

-		_	-4	-44 -			_	_
•	u	п	п	AI	75	та	n	а
_	-	9.9	***	100		9790		9

O Apply

Higher Thinking Skills

4	Change the correct anguer I			
٩	Choose the correct answer :			
1	 When we keep water inside the freezer, the state of water change into 	s from		
	a. liquid – gas. b. liquid – solid. c. solid – liquid. d. gas – liqu	ıid.		
Ċ	except			
	a. water. b. vinegar. c. oil. d. rice.			
	3. You can see different states of matter in the opposite picture.		F	
	a. three b. four			
	c. five d. six	2000	1880	
	4. A and are examples of solids.	(G	iza 20)23)
	a. chair – ice b. juice – ice c. ruler – steam d. bottle – m			ĺ
2	Put (✓) or (X) :			
Ç	1. Frozen vegetables have definite shape.		()
•	2. Steam from boiling water is considered the gas state of water.		()
ç	-		()
3	Complete the following sentences using words below:			
Ī	(solid – liquid – gas – space – containers – particles)			
	The state of matter that has definite volume, but it doesn't have definite volume.	efinito (hon	_
Ī	is		ira 20	
	2. Volume is the amount of that matter takes up.	(DOI)	110 Z.O	20)
	We can classify the types of matter into liquid, and			
Ī	· ·			
Ĭ	4. Matter is made up of tiny			
i	5. Liquids take the shape of their	(Ca	iro 20	23)
4	Give a reason for :			
e	Oil used in cooking is considered as an example of liquid matter.	(Ca.	iro 20.	24)

5 What happens to?						
The state of milk if we put small amount of it	in the	e free	zer fo	r few ho	ours.	
					(Qena 202	?3)

6 Look at the opposite figure, then put (🗸) o	r (x) :					_
1. Label 1 refers to a matter in liquid state.	()				
2. Label (2) refers to a matter in solid state.	ť)	(

Classify the following words and sentences into solids, liquids and gases in the table below:

3. Label ③ refers to a matter that its shape

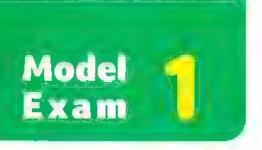
4. Particles of matter (1) move slower than particles

and volume don't change.

of matter 3.

(Iron – Their particles slide over each other – Oxygen – Their particles keep their shape and volume – Juice – Their particles move very free)

Solids	Liquids	Gases
	** ** ********** 4 111 ** **	1/
		1777 1117117477774444444444444444444444



On Concept [2.1]

Total	mark
1	5

1	(A) Complete the following sentences:		(5 marks)
	1. Iron and gold are examples of	. state of matter.	
	2. Matter that takes the shape of its contains	ner, but its volume canno	ot be changed
	3. Any matter is made up of tiny	that we cannot see with	our eyes.
	Scientists cannot use the mick blood cell.		-
	(B) Give a reason for the following:		
	Oil takes different shapes when it is pla different shapes.	ced in some containers t	hat have
2	(A) Put (✓) or (X):		(5 marks)
	 We can understand things that we cann models. 	ot easily see with our ey	es by using ()
	2. Steam of boiling water is considered the	e gas state of water.	()
	3. Matter never changes from one form int	o another.	()
	4. Light and sound are forms of matter.		()
	(B) Cross out the odd word:		
	1. Oil – Milk – Water – Wood.		()
	2. Plastic – Vinegar – Iron – Aluminium.		()
3	(A) Write the scientific term of each of th	e following :	(5 marks)
	1. The tool used to measure the length of	a wall.	()
	2. The building unit of matter.		(
	3. A device used to examine objects that a	re too small to be seen	
	with the naked eye.		(*************************************
	4. The state of water after its heating for h	igh temperatures.	()
	(B) Choose from column (B) what suits it	in column (A) :	
	(A)	(B)	
	1. Carbon dioxide	a. is a solid matter.	
	2. Sand	b. is a liquid matter.	
		c. is a gas matter.	
	1. 2		

Model 2 Exam 2

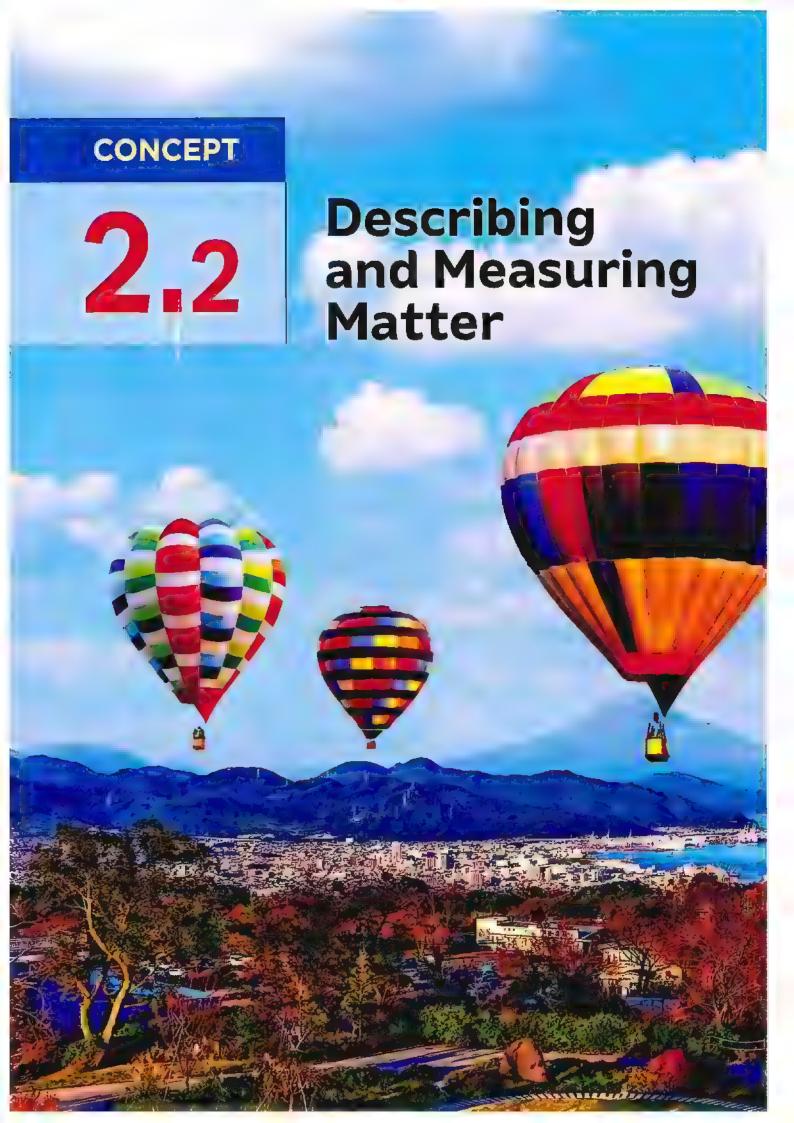
On Concept (2.1)



1	(A) Choose the correct answer:		(5 marks,
	land <mark>are</mark> examples of solids		
	a. Chair – ice	b. Juice – ice	
	c. Ruler – steam	d. Bottle – milk	
2	2. The amount of space that a matter take	s up is called	
	a. volume.	b. mass.	
	c. weight.	d. area.	
3	3. One of the substances that doesn't take	the shape of its container is	
	a. oil.	b. coin.	
	c. gasoline.	d. water.	
4	I. Particles of vibrate around their p	lace.	
	a. glass	b. air	
	c. oxygen	d. water	
	(B) What happens to?		
	The size of a balloon when you blow it u	JD.	

	······································		
2	(A) Complete the following contences (
	(A) Complete the following sentences:		(5 marks,
	I. Particles of matter are very clo		
2	 Particles of matter can slide or of their containers. 	ver each other, so they take the	
٥	 A model of a germ helps us see its shap used to magnify tiny objects. 	e without using a which	n is
4	 When we leave a cup of juice in freezer, state. 	it changes from liquid state into	
((B) Give a reason for :		
	Oxygen has no definite shape or volume	9.	

(A) Write the scientific teri	m of each of the following :	(5 mark
1. A device used to examin	ne one tiny particle such as a blood cell.	(
2. A copy that is similar to a	a real thing which we cannot observe with	h our eyes.
		(
3. The state of water after i	its freezing.	(
4. The state of matter that I	has a lot of spaces between its particles.	(
(B) Choose from column (B	3) what suits it in column (A) :	
	,	
(A)	(B)	
1. Milk		ed tightly.
	a. Its particles are packet b. Its particles have med	lium energy.
1. Milk	a. Its particles are packet	lium energy.





Learning outcomes

By the end of this concept, your child will be able to:

- Classify materials based on their properties and describe patterns in the properties of similar materials.
- Choose the appropriate tools to measure the size and volume of different kinds of materials in different states of matter.
- Plan and conduct investigations to gather and record information about the properties of various materials.
- Analyze data to identify unknown materials.

Key vocabulary

- Mass
- Substance
- Volume
- Measure



On Concept [2.2]

Lessons	Activities	What you should do with your child
	Activity 1	Explain to your child how matter is described and measured.
1	Activity 2	Discuss with your child the kinds of materials which people use to make roofs of homes and buildings.
	Activity 3	Explain to your child how to describe and measure matter.
2	Activity 4	Let your child think about the differences between the physical properties of matter.
	Activity 5	Explain to your child the physical properties and chemical properties of matter.
3	Activity 6	Let your child think about how to measure different physical properties of matter.
	Activity 7	Apply with your child what he/she has learned about measuring matter.
	Activity 8	Discuss with your child about the useful properties of materials.
4	Activity 9	Let your child think about uses of some matter and their properties.
•	Activity 10	Help your child to think like a scientist by answering a question about one of the main points of this concept then write his/her claim, evidence and the scientific explanation.

LESSON ONE

Activity 1 Can You Explain ?



In the previous concept, you have learned about matter and its states.

▶ How is matter described and measured?

- Matter can be described by its color, shape, texture or size.
- We can also describe matter based on its state (solid, liquid or gas).
- We can measure some properties of matter using some tools like :
 - A balance to measure its mass.
 - A ruler to measure its length.
 - A thermometer to measure its temperature.

In this concept, we will study:

- Describing and measuring matter.
- · Properties of matter.
- Measuring matter.
- · Uses of matter.

Activity 2 A Roof for Every Type of Climate

▶ Look at the following pictures, then choose the correct answer:

Rain or snow cannot enter the home through the roof of

(home A - home B)







Home B

In this activity we will know some kinds of materials which people use to make roofs of homes and buildings.

	Material of the roof	Properties of roof material
Desert home	Made of strong stones.	- It is flat. - It protects the home from dust and dirt.
Cold weather home	Made of ceramic tiles (ceramic bricks).	- It is slanted (inclined). - It protects the home from rains.
Tropical rainforest home	Made of leaves and sticks.	- It is slanted (inclined). - It protects the home from animals getting inside.

مائل

stick

July		
(9	All-	4-
V	100	14:

The kind of material used to make a roof depends on the climate where the home is located.

Check your understanding

Treeli godi dilacistanding			
Put (√) or (x):			
1. The desert home roof made of	leaves and sticks.		(
2. Roofs of buildings protect them	from rain, animals	s, dust, dirt or other	
things getting inside.			(
3. The tropical rainforest home ha	s a flat roof.		(
Choose the correct answer :			
1. The roof of desert home is made	of		
a. ceramic tiles.	b. leaves and	sticks.	
c. strong stones.	d. ceramic brid	ks.	
2. The kind of material used to ma	ke a roof depends	s on the w	here
the home is located.			
a. height b. climate	c. location	d. length	

Activity 3 What Do you Already know About Describing and Measuring Matter?

 Everything around us is made of matter, now we will learn about how to describe and measure matter.

Describing matter

- · You already know what is the matter and it could be a solid, a liquid or a gas.
- Matter can be described by its color, shape, odor, texture and size.

Measuring matter

- Each property of material can be measured by using a special measuring tool.
- The following table shows some properties of matter and the measuring tool used to measure each of them.

Property	Volume	Leng	th	Mass	Temperature
Tools	William Lands	Service on the service of the servic	A STATE OF THE PARTY OF THE PAR		
	Measuring cup	Tape measure	Ruler	Balance (common balance)	Thermometer



You may need to measure more than one property of a material to determine if this material is the right one you can use for a certain purpose or not.

Check your understanding

Put each of the following tools in front of its suitable sentence:

(Measuring cup – Thermometer – Ruler – Bala	nce)
1. A tool is used to measure the mass of materials.	

	V
2 A tool is used to measure the temperature of materials	1

4. A tool is used to measure the length of materials.

In the Assessment Book : Try to answer : Self-Assessment (9)

Exercises on Lesson 1

Understand

O Apply

Higher Thinking Skills

	Choose the correct answer:		
	1. Homes which are built in a cold w	reather area have roofs made	up of
	a. ceramic tiles.	b. strong stones.	
	c. carton paper.	d. leaves and sticks.	
-	2. Roofs of are made up of str	ong stones.	
	a. desert homes only		
	b. cold weather homes only		
	c. desert homes and cold weather	homes	
	d. desert homes and tropical rainf	orest homes	
	 Which of the following homes hav a. Desert homes only. 	e an inclined roofs ?	(Gharbia 2023)
	b. Tropical rainforest homes only.		
	 c. Desert homes and cold weather 	r homes.	
	d. Tropical rainforest homes and o	old weather homes.	
ĺ	4. We can measure the mass of an a	apple by using a	(Cairo 2024)
	a. thermometer.	b. ruler.	
	c. measuring cup.	d. balance.	
ا	5. We can measure of a liquid	by using measuring cup.	(Cairo 2023)
	a. length	b. volume	
	c. mass	d. temperature	
Ţ	6. You can measure the length of you	ur friend by using a	
	a. thermometer.	b. tape measure.	
	c. balance.	d. measuring cup.	
	7. All the following can be used to de	scribe matter, except	
	a. shape.	b. price.	
	c. color.	d. texture.	
-	8. We can identify milk by determining	g its	
	a. color and texture.	b. shape and odor.	
	c. color and size.	d. color and taste.	

Complete the following table using these words:

(ruler - balance - temperature - volume)

Tools	Properties
Thermometer	• is used to determine the(1) of a hot water.
(2)	is used to determine the length of a book.
Measuring cup	• is used to determine the(3) of an amount of juice.
14(4),,,,,,,	is used to determine the mass of fruits.

2. A material that is used to build the roofs of desert homes. 3. The property of matter which is measured by a measuring cup. 4. The property of matter which is measured by a balance. 5. The property of matter which is measured by a tape measure. (Damietta 2023) Complete the following sentences:		(2) • is used to determine the length of a book.
Put (v') or (x): 1. We can describe a solid matter by its texture and shape. (Giza 2023) () 2. The roof of tropical rainforest home is made up of leaves and sticks. () 3. The roof of desert home is made up of strong stones to protect it from snow. (Sohag 2024) () 4. We can measure the volume of an amount of oil by using tape measure. (Kafr El-Sheikh 2024) () 5. The length of the classroom wall is measured by using a balance. () 6. You can use thermometer to measure the temperature of a hot cup of water. () 7. We can differentiate between sugar and salt by using their color. () 4 Write the scientific term of each of the following: 1. A material that is used to build the roofs of cold weather homes. (Beheira 2024) (Measuring cup • is used to determine the(3) of an amount of juice.
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1. A material that is used to build the roofs of cold weather homes. (Beheira 2024) (.,,	7. We can differentiate between sugar and salt by using their color. ()
2. A material that is used to build the roofs of desert homes. (4	Write the scientific term of each of the following:
2. A material that is used to build the roofs of desert homes. (A material that is used to build the roofs of cold weather homes.
3. The property of matter which is measured by a measuring cup. 4. The property of matter which is measured by a balance. 5. The property of matter which is measured by a tape measure. (Damietta 2023) Complete the following sentences:		(Beheira 2024) ()
4. The property of matter which is measured by a balance. (2. A material that is used to build the roofs of desert homes. (
4. The property of matter which is measured by a balance. (3. The property of matter which is measured by a measuring cup. (
5. The property of matter which is measured by a tape measure. (4	
(Damietta 2023) Complete the following sentences:		
		(Damietta 2023)
	5	Complete the following sentences :
where the home is located.		We can use different materials to make a roof, depending on the
2. We can differentiate between ice and water as ice is a state while		2. We can differentiate between ice and water as ice is a state while
3. The of your school bag can be determined by a balance.		3. The of your school bag can be determined by a balance.
4. You can use a to measure the mass of matter, while you can use a to measure its temperature.		4. You can use a to measure the mass of matter, while you can use

	5. You can use a ruler to measure the of your book, while you can use a balance to measure its
	6. In the Earth's polar zone, people use in building their home roofs to protect them from
	Give reasons for :
	1. The roof of a desert home is made of strong stones. (Giza 2024)
•	The roof of a tropical rainforest home is made of leaves and sticks.
Í	What happens if?
	The roofs of cold weather homes are flat.
1	Choose the suitable tool to measure some things found at your classroom (you
	can choose the same tool more than once): (Cairo 2023)
	The state of the s
	Tool (A) Tool (B) Tool (C)
	1. You can measure the height of your chair by using tool (
C	From the opposite figure, tool (1) is used to measure of water, while tool (2) is used to measure of tool (1) and water. a. mass – length b. volume – temperature

c. mass – volume d. volume – mass

LESSON TWO

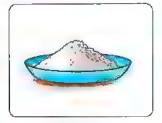
Activity 4 The Case of the kitchen Mystery

- Look at the opposite picture, then put (√) or (x):
 - 1. All these objects have the same shape. ()
 - We can use the sense of sight to
 differentiate between these objects.
 ()

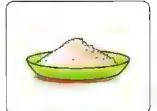


- In this activity, we will examine a variety of substances that look alike.
 - · All substances in this activity are known, but one of them is unknown.
 - We will use our senses to describe the properties of each substance.

Tools



Sugar



Salt



Flour



Unknown mixture



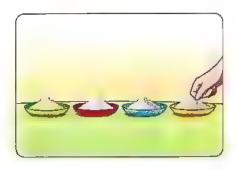
Lens

Note

The unknown mixture is a mixture of two substances found in the materials available in this activity.

Steps

 Check (examine) the four plates in front of you and touch all the substances with your hand to feel their textures.



mystery senses available لغز حوس متوفرة / مناحة check

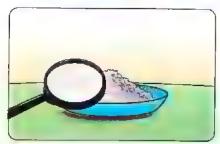
variety

touch أفحص plates تشكيلة

يلمس أطباق 2. Smell all the substances and know the odor of all of them.



3. Use the lens to observe the shape of crystals of each substance.



Observations

- All substances have the same color.
- The substances have different odors.
- The substances are made up of :
 - Large crystals as in sugar.
 - Small crystals as in salt.
 - Very fine particles as in flour.
 - A mixture of large crystals and very fine particles as in the unknown mixture.

Note

According to the previous observations we can find out that the unknown mixture is a mixture of sugar and flour.

Conclusion

Color, texture, odor and shape are some of the properties of matter that are called physical properties.

Check your understanding

- Complete the following sentences:
 - 1. Color and texture are from the properties of matter.
 - 2. You can use your sense of to know the odor of the different matter.

In the Assessment Book: Try to answer:

Self-Assessment (20)

Exercises on Lesson 2

Understand

O Apply

Higher Thinking Skills

1	Cl	noose the correct answer:				
	1.	has large sized crystals, while	e has small sized crystals.			
		a. Salt – sugar b. Salt – flour	c. Sugar – flour d. Sugar – salt			
	2.	Which of the following properties is matter?	s/are considered as physical properties of (Ismailia		23)	
		a. Color only.	b. Shape only.			
		c. Color and odor only.	d. Color, shape and odor.			
	3.	We can differentiate between vineg	ar and perfume by using the sense of			
			c. smell. d. hearing.			
	4.	We can differentiate between salt a except the	and flour through all the following proper	rties	3,	
		a. shape of particles.	b. texture of particles.			
		c. taste.	d. color.			
	5.	5. We can differentiate between all the following matter as they have different colors, except				
		a. salt and flour.	b. salt and pepper.			
		c. milk and oil.	d. flour and pepper.			
1	6.	The is used to measure the observe the shape of a material.	e mass of a material, whileis us	sed	to	
		a. balance – lens	b. measuring cup – balance			
		c. lens – tape measure	d. ruler – lens			
2	Pi	ıt (✓) or (X) :				
	1.	Salt and sugar have the same cold	or and odor.	()	
	2.	You can use the lens to identify the	e odor of sugar.	()	
	3.	Among physical properties of matte	er are shape and texture.(Beni Suef 2023)	()	
ľ	4.	We can differentiate between suga	r and flour by texture only.	()	
		Color of milk is considered as one		()	
<u> </u>	6.	You can differentiate between the	components of salt and flour mixture			
		by using your sight sense only.	(Cairo 2023)	()	

3	Complete the following sentences by using the words below:
	(odor – smaller – physical – color)

The taste of apple is from properties of apple.

(Giza 2023)

- 2. Salt and sugar are similar in
- 3. You can identify the of a juice by using the sense of smell.
- 4. The crystals of salt is than that of sugar.

Give a reason for the following:

You can use the sense of sight only to differentiate between salt and pepper.

Identify the components of the following mixture, using the table below that shows some properties of three different substance:

- 1. A mixture of large crystals substance and large particles substance :
- 2. A mixture of sweet taste substance and salty taste substance :
- 3. A mixture of small crystals substance and black color substance :

Substances	Sugar	Salt	Pepper
Properties	- Sweet taste Large crystals White color.	- Salty taste Small crystals White color.	- Spicy taste Large particles Black color.

LESSON THREE

Activity 5 Properties of Matter

- ▶ Look at the following picture, then put (√) or (x) in front of the following sentences:
 - The material of the paper is changed after its burning.
 - 2. Can you use the paper in writing after burning it. (



- You have learned different ways to describe and measure matter.
- · Now we will learn more ways in which matter can be observed and measured.

FIRST Physical properties

· Physical properties of matter are :









Notes

- 1. You can observe the physical properties with your five senses.
- You can use words such as rough, blue, round and sweet to describe the physical properties.

SECOND Chemical properties

Chemical properties of a material can be observed and measured by the changes that happen in this material when it interacts with other materials.

Examples of chemical properties

▶ The ability to burn:

Such as when a paper interacts with fire, the paper becomes ash.

▶ The ability to rust :

Such as when an iron nail interacts with water and air, the iron nail rusts.



Volume and Mass

Now, let's study volume and mass that are considered important properties of matter.

Volume

It is the amount of space that matter takes up.

The measuring units of volume are:

- Liters (L).
- Milliliters (mL).
- Cubic centimeters (cm³).

 $1L = 1000 \text{ mL} = 1000 \text{ cm}^3$

Example : A big bottle of water contains 1 liter or more.



Mass

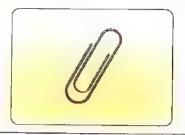
It is a measure of the amount of matter.

The measuring units of mass are :

- Gram (g).
- Kilogram (Kg).

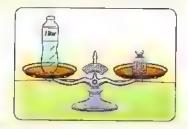
1 Kg = 1000 g

Example : A paperclip has a mass about 1 gram.





One liter of water has a mass of 1 kilogram.



rust

Temperature

- · In the previous concept you have learned that matter is made up of particles that are in continuous motion.
- Temperature is a measure of how quickly the particles in a matter are moving.

- 1. Quickly moving particles produce more thermal energy (heat) than slower moving particles.
- 2. Volume, mass and temperature are properties of matter that you can measure.

Check	your understanding
-------	--------------------

Put	1./	OF	161	
Pul.	1 V I	ur		

P	ut (✓) or (×):		
1.	The ability of matter to burn and rust are considered from chemical		
	properties of matter.	()
2.	The measuring units of volume are liters, milliliters and cubic		
	centimeters.	()
3.	Quickly moving particles produce less heat energy than slower		
	moving particles.	()

Activity 6 Measuring Properties

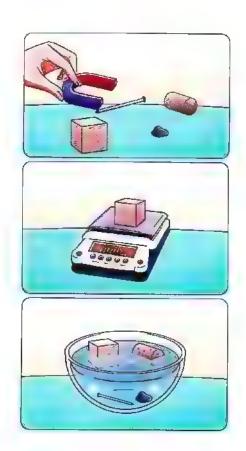
- · You have learned the properties of matter and how to describe and measure it.
- In this activity we will measure different physical properties of matter.

Tools

Basin containing water – Magnet – Balance – Stone Iron nail – Piece of wood – Piece of cork.

Steps

- Hold the magnet near to each of the previous substances, and observe what substances are attracted to the magnet.
- Measure the mass of each substance by using the balance.
- Put all substances in the basin that contains water to observe which materials will float and which will sink.
- 4. Record your results in the following table.



Observations

Property Substance	Stone	Iron nail	Piece of wood	Piece of cork
Attracted to magnet or not	Not attracted	Attracted	Not attracted	Not attracted
Mass (g)	50	30	100	20
Sink or float	Sinks	Sinks	Floats	Floats

Conclusions

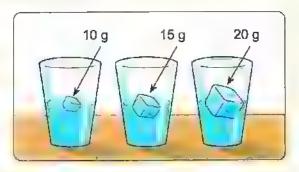
- Some substances are attracted to the magnet and some other substances are not attracted to the magnet.
- Floating and sinking of a substance doesn't depend on its mass.

♥ Note

Ice is lighter than water so, ice floats on the water surface.

Example:

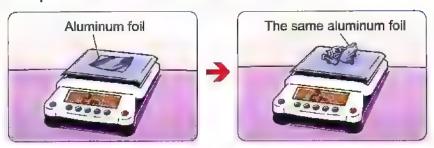
The opposite figures show three ice cubes with different masses (10 g - 15 g - 20 g), all ice cubes float on the surface of water because ice is lighter than water.



Does the shape and size affect the mass of a material?

1 The shape of a material

Changing the shape of a material doesn't affect its mass.



2 The size of a material

If you cut an apple in two halves and measure the mass of one half, the mass would be nearly half the mass of the original apple.



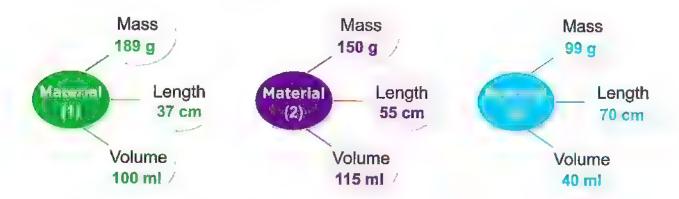
Check your understanding

▶ Put (√) or (x):

- 1. All substances are attracted to the magnet.
- 2. Changing the shape of a material doesn't affect its mass. ()
- 3. Floating and sinking of a substance doesn't depend on its mass. (

Activity 7 Measuring Matter

- You have learned a lot about using measurements to compare materials and properties of matter.
- In this activity you will apply what you have learned about measuring matter.
 - In front of you three materials, observe the data of each of them to compare between their properties.



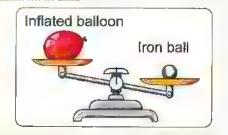
Based on the previous data we can conclude that :

- Material (1) has the biggest mass although it doesn't have the largest volume.
- Material (2) has the largest volume although it doesn't have the biggest mass.
- Material (3) is the longest one.

V Note -

For example:

Although an inflated balloon takes larger volume than that of an iron ball, it has bigger mass than that of the inflated balloon, this is due to that the iron ball contains more amount of matter than the balloon.



3

Check your understanding

Put (√) or (x):

- 1. All materials which have big masses must have large volume. ()
- 2. If two different materials have the same volume, so they must have the same mass.

In the Assessment Book :
Try to answer
Self-Assessment (21)

Exercises on Lesson 3

Understand

O Apply

• Higher Thinking Skills

1	C	hoose the correc	t answer :			
1. When the iron interacts with water and air, it						
		a. becomes ash	4	b. becomes power	ler.	
		c. burns.		d. rusts.		
ĺ	2.	The ability of wo	ood to burn is cons	idered as of	wood.	
		a. only physical				
		b. only chemical				
			and chemical prop			
			cal nor chemical pr		16 1 48	F 11
ĺ	3.		operty of milk throu b. texture	gn wnicn you can c. color		
		a. odor			d. taste	
	4.	_	are physical prope			(Ismailia 2023)
		a. color.	b. rusting.	c. texture.	d. shape.	
	5.		e the volume of a		owing units, e	xcept
		a. kilogram.c. cubic centime	itare	b. milliliters. d. liters.		
	^					
	ъ.		one liter of water ha b. one kilogram.			centimeter
	7		-			
	/.	of	000 cubic centime	ters of a liquid is e	equal to the sa	ame volume
			b. 1 gram.	c. 1 centimeter.	d. 1 liter.	
	8.	When particles	of matter move qui	ckly they produce	more e	nergy.
		a. thermal	b. light	c. sound		•
	9.	All the following	properties of matte	er can be measure	ed by different	tools,
		except			•	
		a. mass.	b. volume.	c. color.	d. temperatu	ıre.
	10.	Which of the foll	lowing objects is at	tracted to the mag	net ?	
		a. Ice cube.	b. Paper clip.	c. Woody spoon.	d. Plastic rul	er.
,	11.	Which of the foll	owing objects float	ts on the surface o	f water?	
		a. Iron spoon.	b. Piece of stone.	c. Iron nail.	d. Piece of d	ork.

	12. Which of the following objects si	inks and not attracts to the magnet?		
	a. Wood cube.	b. Iron nail.		
	c. A piece of stone.	d. Plastic cup.		
	13. If you fold a piece of paper, its	will not change.		
	a. mass and color	b. color and shape		
	c. mass and shape	d. color and size		
	14. If we cut a tomato into two halve to its half.	s, the of one half of tomato will d	ecrea	ase
	a. color	b. mass		
	c. temperature	d. shape		
	15. One kilogram of tomato differs fi	rom one kilogram of wood in the		
	a. volume only.	b. mass only.		
	c. volume and mass.	d. color and mass.		
	Put (✓) or (X) :			_
		ice of matter	,	
	Shape is one of chemical properties of matter at		()
	2. All physical properties of matter c		()
	be equal.	erials are equal, so their volume must Dakahlia 202)	1 10	١
	4. Ability of fuel to burn is considered	•	3) (1	,
		and then leave it in air, it will rust.	()
	·		(,
	of a matter.	reasing the speed of moving particles	()
	7. Iron spoon is attracted to the mag	net. (Damietta 202	23) ()
	8. Iron nail is attracted to the magne		.07 (,
		(Kafr El-Sheikh 202	24) ()
	9. If we put a wooden cube in water,	it will float.	()
,	10. If we cut an apple into 4 pieces, the		,	,
	the mass of whole apple.	•	()
	11. 1 kilogram of water has a volume	equals 1000 milliliters.	()
	12. The mass of iron bar whose volur	me equals 50 cm ³ differs from the mas	s of	
	wood bar that has the same volur	me. (Cairo 202	(3))

	write the scientific term of each of the following.
	1. The properties of matter which you can observe by using your five senses. (
	The properties of matter which can be observed and measured by the changes that happen when the material interacts with
	other materials. ()
4	3. It is the amount of space that matter takes up. (Cairo 2023) (
	4. It is a measure of the amount of matter.
	5. It is a measure of how quickly the particles in a matter are moving. ()
4	Complete the following sentences by using the words below:
	(опе thousand – chemical – temperature – volume – physical – rough –
	mass – iron – attracted – doesn't attract – cotton – floats – sinks)
-	1. Both of odor and texture of matter are considered from the properties
	of matter.
	The ability of a piece of iron to rust is from the properties of matter. (Cairo 2024)
	3. By decreasing the speed of particles of a matter its will decrease.
	4. We can describe the texture of sugar crystals by saying "it has crystal texture".
	5. A spoon of wood to the magnet and on the surface of water.
6	6. An iron ruler in water, and to the magnet.
1	7. The of 1 liter of water has a mass of 1 kilogram.
0	8. The mass of 1 kilogram of apple equals the mass of pieces of paper clip.
	9. If you eat a small piece from a banana, so the of the remaining piece
	of banana will decrease.
	10. If an iron cube and an amount of cotton have the same mass, so the volume of
	is smaller than that of the

	5 Give reasons for :	(Cairo 2023)
	Rusting of iron is considered a chemical property of matter	er.
		·····
	 2. When the particles of a matter move quickly, its temperate 	re increases.

	What happens to?	
	A piece of paper if it interacts with fire.	
	2. The temperature of a matter if the speed of its particles de	acreace
	1) (MANAGEMENT)	
	3. An iron nail and a plastic spoon if they are put close to a n	nagnet.
	4. A piece of cork if it is put in water.	

	Put letter (P) in front of physical properties and letter (C) in	front of chemical
-	properties of the different materials below :	(Giza 2023)
	1. The white color of milk.	and the second of the second of the second of
	2. The ash produced from burning a paper.	(x, twite \$4.0 x4.5 (6.5.0.5.5.5.5.5.5.)
	3. The large crystals of salt particles.	()
	4. The odor of perfume.	()
	5. The rusting of a piece of iron.	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	6. The sweet taste of sugar.	(,)
	7. The round shape of a ball.	(

8 Look at the following figures, then choose the correct answer:



Material (A) Iron cube



Material (B) Piece of cork

1. Material has the largest volume.

(A - B)

2. Material has the largest mass.

(A - B)

3. Material is attracted to the magnet.

(A - B)

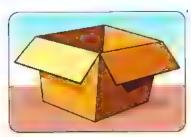
4. Material floats on the surface of water.

(A - B)

Look at the following pictures, then completethe following sentences by using the words below :

(mass - smaller - larger)

- 1. The volume of the empty carton box isthan the volume of the football.
- 2. The mass of the empty carton box isthan the mass of the football.
- 3. The matter which has the larger volume, don't always have the larger



Empty carton box 100 g



Football 450 g

LESSON FOUR

Activity 8 Useful Properties of Matter

- ▶ Look at the opposite picture, then put (√) or (x):
 - 1. This cooking pot is made up of copper.
 - Handles of this cooking pot are made up of plastic.



In this activity, we will learn about the useful properties of some materials.

Helium

Properties of helium

Physical properties

It is a light gas which means it is lighter than air.

Chemical properties

- It is not poisonous.
- It is not flammable (A flammable material means that this material burns and form fire).

Uses of helium

It is used to fill balloons



It is used to fill blimps



Give reason for :

Balloons and blimps filled with helium always rise up in the air. Because the helium is lighter than air.

Note

As helium is not flammable or poisonous, so it is a gas that can be used safely.

Copper

Physical properties

- · It can be shaped into thin, flexible wires.
- It conducts electricity well (good conductor of electricity).
- It conducts heat well (good conductor of heat).

Conduction:

The ability of materials to transfer heat and conduct electricity.

Uses of copper





It is used in making cooking pots



Give reason for :

Electric wires are made up of copper.

Because copper is a good conductor of electricity and can be stretched into a thin, flexible wire.

♥ Note

Wood and plastic are bad conductors of heat so, they can be used in making handles of cooking pans.

S

Check your understanding

▶ Look at the following figures, then answer the questions:



Figure (a)



Figure (b)

- 1. In which figure the hand will feel hot.
- 2. The cooking pan is made up of

(Figure (a) – Figure (b))

(wood - copper)

Activity 9 Uses of Matter

You have learned a lot about the properties of materials.

Now, we will learn about some uses of some other materials.

▶ The following table shows some uses of some materials and their properties.

Types of matter		Uses (purposes	5)	Property
Steel	Screwdr	ivers Ha	ammers	Hard.Strong.
Glass	Windows	Light bulb	Eyeglasses	Transparent. Smooth.
Rubber	Tires	Gloves	Athletic shoes	Waterproof.Flexible.

Check your understanding

- Complete the following sentences:
 - 1. Among the properties of rubber that it is waterproof and
 - 2. Hammers are made up of

Activity 10 Record Evidence Like A Scientist

- ▶ In this concept, you have learned a lot about matter and how describing and measuring it.
- Now, try to think like a scientist by writing your claim, your evidence and your scientific explanation about one of the main points of this concept through the four steps you have learned in the previous concepts.

? Step 1 The Question	
How is matter described and measured?	
Step 2 My Claim	
Step 3 My Evidence	
Step 4 My Scientific Explanation	
, . , . ,	
Review on Concept [2 - 2]	In the Assessment Book: Try to answer:
To review this concept look at the Assessment Book "Part 2: Final Revision".	 Self-Assessment 22 Model Exam on Concepts (2.1 & 2.2)

194

claim

evidence افتراضی

scientific explanation دليل

التفسير العلمى

Exercises on Lesson 4

Understand

Choose the correct answer:

O Applely

Higher Thinking Skills

•	1. Helium is lighter than air, this property is considered as
	a. a physical property only.

b. a chemical property only.

c. both physical and chemical property.

d. neither physical nor chemical property.

2. Blimps are filled with	to rise	up in the air.
---------------------------	---------	----------------

a. oxygen gas

b. carbon dioxide gas

c. atmospheric air

d. helium gas

3. We can use copper to make (Cairo 2023)

a. handles of cooking pans.

b. body of cooking pans.

c. gloves.

d. tires.

4. Steel is used in making hammers, because it is (Giza 2023)

a. flexible.

b. smooth.

c. hard.

d. transparent.

5. Glass is transparent, so it can be used in making (Minia 2023)

a. eyeglasses, b. tires.

c. screwdrivers. d. gloves.

6. When you put a lighting match close to helium gas, it will

a. burn.

b. not burn.

c. form fire.

d. freeze.

7. If you touch the end of the copper bar shown in the figure, you will feel it hot because copper is a.....

good conductor of electricity.

b. bad conductor of electricity.

good conductor of heat.

d. bad conductor of heat.



8. All the following are from the physical properties of copper, except that

a. it is good conductor of electricity.

b. it is good conductor of heat.

c. it can be stretched into thin wires.

d. it is lighter than air.

9. Rubber is used to make all the following, except

a. athletic shoes.

b. gloves.

c. tires.

d. windows.

2 Choose from column (A) what suits it in both columns (B) and (C):

(A)	(B)	(C)
Matter	It is used to	Because it is
1. Copper	a. make eyeglasses.	A. strong.
2. Helium	b. make tires.	B. good conductor of electricity.
3. Rubber	c. make hammers.	C. transparent.
4. Glass	d. fill balloons.	D. lighter than air.
5. Steel	e. make electrical wires.	E. flexible.
1	_	
Put (✓) or (X):		
1. From the chemica	al properties of helium is that	it is not flammable.
		(Port Said 2024) (
2. Helium is a gas th	nat can be used safely, becar	use it is poisonous.
		(Cairo 2024) (
	making cooking pans becau	
conductor of elec	•	(Giza 2024) (
	ng pans are made of wood or	· ·
are bad conducto	·	(Gharbia 2023) (
5. Glass is used in r	making windows, because gla	ass is a transparent (Fayoum 2024) (
***	ard, so it is used in making at	
-	e very strong, so they are ma	
	s filled with helium, it will fall d	
o, writer a balloon is	illed with helium, it will fall d	
Write the scientific	term of each of the following	ng:
1. The ability of mat	erials to transfer heat and co	nduct electricity.
		(Beheira 2024) (
2. It is a light gas wh	nich is used in filling balloons	and blimps. (
20.000 - 0.000		(Ismailia 2023
2 A matter which is	used in making alayee been	,
and flexible.	used in making gloves beca	(
Complete the follow	wing sentences :	
•	•	idered as a property.
	gas to fill blimps, becau	
		(Cairo 2023
	or, so it is co	

	 The ability of copper to be stretched, is from
	of or plastic. (Cairo 2023)
6	Give reasons for : 1. Helium is used to fill balloons and blimps.
	2. Human can use helium gas safely.
	Wood and plastic are used in making handles of cooking pans.
7	What happens if?
Ī	1. A blimp is filled with helium gas. (Assuit 2023)
	2. Electrical wire is made from wood instead of copper.
8	Look at the following figures, then choose the suitable material which is used in making this objects using the words below: (Rubber – Copper – Glass – Helium – Steel) 1

5.

[197]

Model 1 Exam

On Concept [2.2]

Total	mark
1	5

(A) Choose the correct answe	er:	(5 mai	rks)
` '	al properties of matter, except		
a. color.	b. rusting.		
c. texture.	d. shape.		
2. Homes which are built in a	cold weather area have roofs made up of		
a. ceramic tiles.	b. strong stones.		
c. carton paper.	d. leaves and sticks.		
3. We can differentiate betwee	en vinegar and perfume by using the sense o	f	
a. touch.	b. sight.		
c. smell.	d. hearing.		
4. If we fold a piece of foil pap	er, its will change.		
	b. mass and color		
a. size and shape			
c. mass and shape (B) Give a reason for the follo			
c. mass and shape (B) Give a reason for the followard the followard that the followard t	owing:		
c. mass and shape (B) Give a reason for the followard the followard that the followard t	owing : s safely.	(5 ma	rks)
c. mass and shape (B) Give a reason for the followard the followard that the followard for the follow	owing : s safely.	(5 ma	 rks)
c. mass and shape (B) Give a reason for the followard the followard that the followard for the follow	s safely. s used in making athletic shoes.	(5 ma	 rks;
c. mass and shape (B) Give a reason for the followard the followard for the followa	s safely. s used in making athletic shoes.	(5 ma	 rks)
c. mass and shape (B) Give a reason for the followard the followard for the followa	s safely. s used in making athletic shoes. solume equals 1000 milliliters. sen the components of salt and flour mixture	(5 ma (rks)
c. mass and shape (B) Give a reason for the following the	s safely. s used in making athletic shoes. solume equals 1000 milliliters. sen the components of salt and flour mixture	(5 ma ())
c. mass and shape (B) Give a reason for the following the	s safely. s used in making athletic shoes. solume equals 1000 milliliters. sen the components of salt and flour mixture at only.	(5 ma (()
c. mass and shape (B) Give a reason for the following the	s safely. s used in making athletic shoes. solume equals 1000 milliliters. sen the components of salt and flour mixture at only.	(5 ma ((

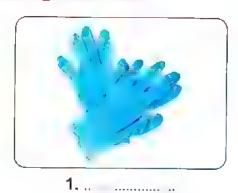
3 (A) Choose from column (B) what suits it in column (A):

(5 marks)

(A)	(B)
1. Thermometer	a. is used to determine the length of a book.
2. Ruler	b. is used to determine the mass of some apples.
3. Measuring cup	c. is used to determine the temperature of a hot cup of tea. d. is used to determine the volume of an amount of water.
4. Balance	e. is used to determine the shape of a book.

1. ... 3. 4.

(B) Look at the following figures, then write the suitable material which is used in making these tools:





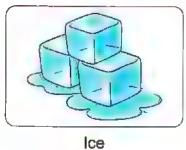
Model 2 Exam 2

On Concept [2.2]

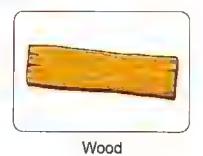


1 (A) Put (✓) or (X):	(5 mai	rks)
1. The roof of desert home is made up of strong stones to protect it from	snow. ()
2. All physical properties of matter can be measured.	()
3. Iron spoon is attracted to the magnet.	()
4. From the chemical properties of helium is that it is not flammable.	()
(B) Give a reason for the following:		
The roof of tropical rainforest home is made of leaves and sticks.	******	
(A) Complete the following sentences using words below:	(5 mai	rks)
(temperature – chemical – climate – mass)		
1. Heluim is not flammable, this property is considered as a	property.	
2. By decreasing the speed of particles of a matter its will de	ecrease.	
We can use different materials to make a roof, depending on the where the home is located.		
 If you eat a small piece from a banana, so the of the remaindered of banana will decreases. 	aining pied	e
(B) What happens to?		
The temperature of a matter if the speed of its particles decreases.		
(A) Write the scientific term of each of the following:	(5 ma	rks)
 The properties of matter you can observe by using your five senses. 	()
The property of matter which is measured by the balance.	()
3. It is a light gas which is used in filling blimps.	()
4. The ability of material to transfer heat and conduct electricity.	()

(B) Choose the correct statement about the following pictures:







Stones

1. All the previous materials sink in water.

- 2. All the previous materials don't attract to the magnet.
- 3. All the previous materials are attracted to the magnet.
- 4. All the previous materials float on the surface of water.

CONCEPT

2.3

Comparing Changes in Matter





Learning outcomes

By the end of this concept, your child will be able to:

- Explain the relationship between changes in temperature, states of matter and mass.
- Identify the causes of changes in the physical and chemical properties of matter.
- Investigate what happens when two or more substances are mixed.
- Classify mixtures and compounds based on what happens when they are combined.

Key vocabulary

- Chemical change
- Energy
- Chemical properties
- Friction
- Compound
- Heat
- Physical change
- Light
- Thermal energy
- Melt
- Water vapor
- Mixture

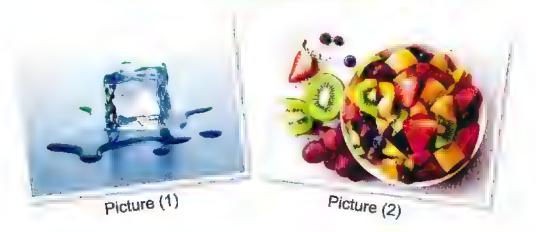


On Concept [2.3]

Lessons	Activities	What you should do with your child
	Activity 1	Explain to your child what happens to the mass of a matter when it is heated, cooled or mixed with other substances.
1	Activity 2	Discuss with your child about the meaning of melting matter.
	Activity 3	Explain to your child how the motion of the particles of a matter is related to the thermal energy of this matter.
2	Activity 4	Discuss with your child that the temperature of the matter affects on the state of the matter.
2	Activity 5	Explain to your child how changing of states of matter happens.
3	Activity 6	Discuss with your child about the difference between mixture and compound.
3	Activity 7	Explain to your child how the masses of substances do not change after mixing with other substances even if there are changes in their properties.
	Activity 8	Explain to your child the meaning of the physical changes and some examples of the physical changes.
4	Activity 9	Explain to your child how chemical changes affect the substances producing new substances with new properties.
	Activity 10	Explain to your child that we can differentiate between chemical and physical changes using some evidences.
5	Activity 11	Help your child to think like a scientist by answering a question about one of the main points of this concept then write his/her claim, evidence and the scientific explanation.
	Activity 12	Let your child think about how important the desalination is and how it helps people to survive.

LESSON ONE

Activity 1 Can You Explain ?



- In the previous concepts, you have learned that there are different states of matter and each matter takes up space and has mass.
- · Also, you have learned that each matter has its own physical and chemical properties.
- The pictures above show that matter can be changed to different states as in picture (1) and matter can be mixed with other matter as in picture (2).

▶ What happens to the mass of a matter when it is heated, cooled or mixed with other substances ?

- The mass of any matter does not change when it is heated, cooled or mixed with other matter such as:
 - In picture (1), when ice cubes are heated and changed to water, the mass does not change.
 - In picture (2), the mass of any of the fruits before mixing with other fruits is the same after mixing with other fruits.

In this concept, we will study:

- Temperature and state of matter.
- Mixtures.
- Properties of mixtures.
- Physical changes in our lives.
- Chemical changes.

Activity 2 Melting Matter

▶ Put the suitable word from those between brackets under the suitable picture :

(Liquid - Gas - Solid)







state

..... state

. state

- Water is a matter that can be found in the three states of matter which are solid, liquid and gas states.
- Imagine that you forget a bowl contains ice cubes in a hot place, you will find water in the bowl instead of ice cubes. That means the ice melts and is turned into water.

Melting:

It is a process in which a matter is changed from solid state to liquid state when its temperature increases (by heating).





Water in solid state (ice) should be kept below certain temperature to stay in solid state.

Check your understanding

- Complete the following sentences:
 - 1. Ice is the state of water.
 - 2. Melting is the change of matter from state to state by heating.
- ▶ Put (√) or (x):
 - Water vapor is the solid state of water.
 ()
 - 2. When heating ice, it changes from a liquid state to a solid state. ()

Activity 3 Particles

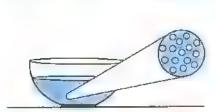
Thermal energy

- Heat is not a physical thing (material) but it is a form of energy known as "thermal energy".
- We use thermal energy every day in many things such as cooking food and warming homes.
- The thermal energy from the Sun keeps living things on the Earth alive.



Particles in motion

- As you have studied in the previous concept that any matter is made up of very small particles.
- Particles in matter are always in motion state even in solids that their particles are close together.
- ▶ The effect of thermal energy on the motion of particles :



Water before heating

 Particles in matter have energy that make them able to move, vibrate and spin around.





Water during heating

 When particles of matter absorb more thermal energy, they move, vibrate and spin around faster that causes this matter becomes warmer.



Light energy is like thermal energy, as when particles of a matter absorb them, particles move, vibrate and spin faster.



Check your understanding

▶ Put (√) or (x):

Thermal energy is a matter.

2. When particles of a matter are warmed, they move slower and come close together.

in the Assessment Book:
Try to answer:
Self-Assessment (23)

(

physical thing		motion state		spin around	يدور حول
warmer	أدفأ	come close	يقترب	light energy	طاقة ضوئية
vibrate	يهتز	absorb		faster	 سرع.
spread	gathers)				

Exercises on Lesson 1

Understand

O Apply

Higher Thinking Skills

	C	noose the correct	answer:			
	1.	When ice melts,	it turns from	state to state	9.	
		a. liquid – solid	b. solid – liquid	c. liquid – gas	d. solid – gas	3
 	2.	Ice can turn into	water by			
		a. cooling.	b. freezing.	c. rusting.	d. heating.	
•	3.	The source of th	ermal energy whic	ch keeps living thin	gs alive on th	e Earth is
		the				
		a. moon.	b. fire.	c. heater.	d. Sun.	
•	4.	When the water	is heated, its parti	cles		(Damietta 2023)
		a. move slower.		b. move faster.		
		c. move with the	same speed.	d. do not move.		
•	5.	When we heat a	liquid, the distanc	e between its parti	cles will	
		a. decrease.		b. increase.		
		c. not be affected	d.	d. become zero.		
0	6.	When ice is kept	t in a cold tempera	ture, it		
		a. turns into wate	er.	b. turns into stear	n.	
		c. remains as it is	S.	d. becomes uncle	ear.	
 ှ	7.	Ice changes from	n solid state to liqu	uid state by increas	sing its	
		a. length.	b. mass.	c. temperature.	d. volume.	
Ç	8.	When particles of	of water absorbs lig	ght energy, they wi	ill	
		a. move faster.	b. vibrate slower.	c. spin slower.	d. become c	lose together.
	9.	Which of the follow	owing matter parti	cles are very close	together?	
		a. Oxygen gas.	b. Water.	c. Oil.	d. Wood.	(Alex. 2023)
-	10	. All the following	happen to the par	ticles of oil when i	t is heated, ex	ccept that
		they				(Gharbia 2023)
		a. spin around fa	ister.	b. move faster.		
		c vibrate less		d vibrate faster		

2	Put (\(\super) \) or (\(\times \) :		
ļ	1. An ice cream turns into liquid by cooling.	()
	2. If we increase the temperature of some pieces of ice, they will melt.	()
+	3. When particles of a matter absorb thermal energy, they move slower.	(_)
	(Ale	x. 20	123)
•	4. If a matter absorbs light energy, its particles vibrate and move faster.	()
•	5. Particles of solid matter are spread out from each other.	()
7	6. The mass of an amount of apple juice will change if we mix it with water.	()
49	7. The mass of some pieces of ice will be the same when they are melted.	()
3	Complete the following sentences :		
	1. Melting process occurred by the temperature of the matter.		
•	2. When ice melts, it changes from a state to a state.		
•	3. The form of energy which is used in cooking food and warming homes		
		ro 20	24)
i	4. The distance between particles of solid matter is very		
Ì	5. When an amount of a liquid is heated, the speed of its particles will		
Î	6. The process by which a matter is changed from solid state to liquid state		
	·	ro 20.	23)
Í	7. When we heat ice cream, it and becomes liquid.		
Ī	8. When we keep some of ice cubes in a low temperature, they don't9. When a matter absorbs light energy, its temperature will and		
	becomes warmer.		
	10. Heat is a form of energy that is known as energy.		
4	Give reasons for :		
S	1. Ice is turned into water when it is placed in a warm room.		
	· ·		
Ç	2. When particles of cold water absorb thermal energy, the water becomes wa	arme	er.
	(Ismail		
5	What happens to?		
	1. Some ice cubes if we increase their temperature.		
		-44	
	2. The motion of water particles if we heat an amount of water. (Giz	a 202	23)

6 Look at the following pictures, then complete the following sentences:







Picture (1)

Picture (2)

Picture (3)

- 1. Picture (.....) is considered as a solid state of water.
- 2. Picture (.) is considered as liquid state of water.
- 3. Picture (.....) is considered as gas state of water.
- 4. Picture (.........) Melting picture (.........).

? Look at the following figures, then put (\checkmark) or (x):



Butter Figure (1)



Melted butter Figure (2)

- 1. When butter is heated, it turns into a liquid state.
- 2. The temperature in figure (1) is higher than that in figure (2).
- 3. The particles of butter in figure (1) move faster than that in figure (2).
- Matter changes from one state to another with an increase or decrease in temperature.

LESSON TWO

Activity 4 Temperature And State of Matter

Put (√) or (x):

- Matter cannot be changed from one state to another.
- 2. When heating ice cubes, they will melt.
- You have learned that the temperature is a measure of how quickly the particles in a substance are moving.

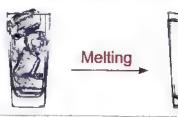
So, the temperature measures how much energy the particles in a substance have.

Temperature and states of matter

 Changes of states of matter are often affected by the changes in temperature of matter which cause changes in energy of particles of that matter.

Melting

- In this process, the particles of a solid matter gain energy.
- This causes particles to move around more and their temperature increases.
- So, the matter changes to liquid state.
- ▶ For example :
- When the temperature of solid ice increases above 0°C, its particles gain energy and they move around more, so the ice changes to liquid water.



Freezing

- In this process, the particles of liquid matter release energy.
- This causes particles to move slower and their temperature decreases.
- So, matter changes to solid state.
- For example:
- When the temperature of liquid water decreases below 0°C, its particles release energy and they move slower, so liquid water changes to solid ice.



Notes

- 1.0°C is known as the freezing point of water.
- 2. Water is found in liquid state between 0°C and 100°C.
- 3. (°C) is the measuring unit of temperature.

quickly increase release below بسرعة above يزيد gain بطلق آذني / سفل آعلی

تكتميب

decrease freezing point يقل بقطة التجمد



- Melting of ice and freezing of water are examples of a change in the state of matter.
- Changing the state of matter is considered as a "physical change".
- But, what is meant by physical change ?

Physical change:

It is a change in matter without any change in its structure.

Example: When chocolate melts, it changes from solid state to liquid state, but its taste, color and smell don't change.

 Physical changes are usually reversible such as melting is the reverse process of freezing.

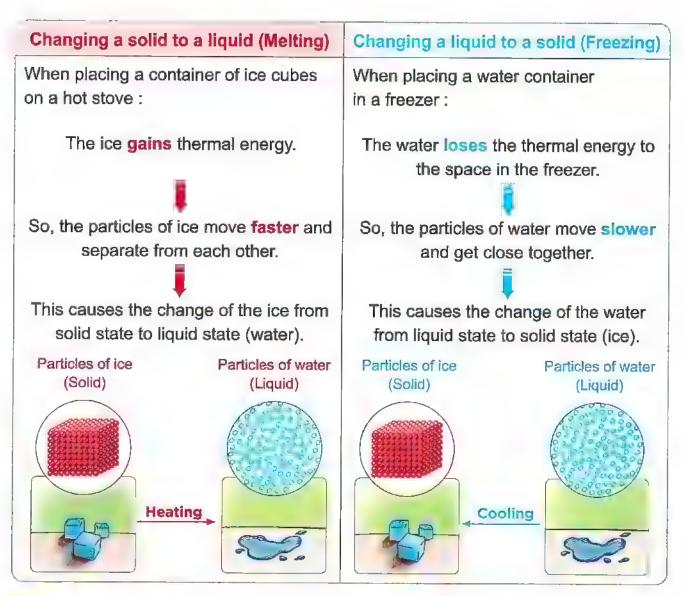


Check your understanding

- Complete the following sentences:
 - In freezing process, the particles of a liquid matter release energy and their temperature
- Put (√) or (x):
 - 1. The temperature of matter does not affect the state of matter. ()
 - 2. In melting process, the particles of a liquid matter gain energy. ()

Activity 5 What's the Matter? Changing States

- You have learned that matter can be changed from one state to another if its temperature changes.
- We will study changing of states that happen in water as an example of changing of states of matter.



Give a reason for :

Freezing process causes decrease in the speed of the particles of matter.

Because in freezing process the particles of matter lose the thermal energy, so the particles move slower.



Changing a liquid to a gas (Evaporation)

When boiling a water container on a hot stove :

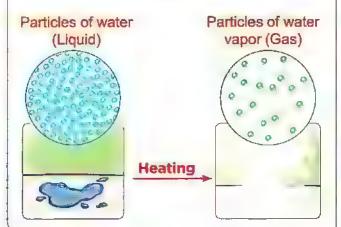
The water gains thermal energy.



So, the particles of water move more faster and separate much more from each other.



This causes the change of the water from liquid state to gas state (water vapor).



Changing a gas to a liquid (Condensation)

When water vapor touches a cold lid:

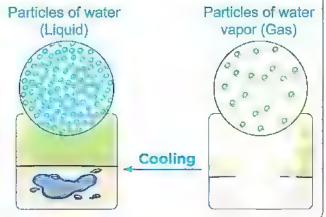
The water vapor loses the thermal energy to the cold lid.



So, the particles of water vapor move slower and get close together.



This causes the change of water vapor from gas state to liquid state (water).



Note

Water vapor differs from steam, where :

- When water boils, it produces water vapor which is invisible in the air.
- When the water vapor hits cooler air, it condenses into tiny water droplets forming a visible small white cloud known as steam.

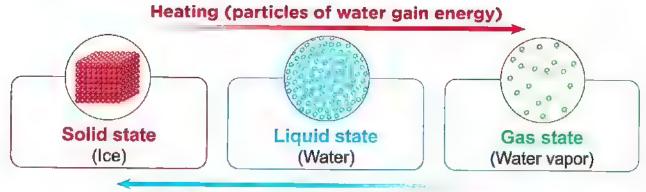


Give a reason for:

We can see steam during cooking food.

Because when the water vapor hits cooler air, it condenses into tiny droplets which looks like small white clouds that are visible.

We can summarize the previous in the following diagram :



Cooling (particles of water release energy)

Check your understanding		
▶ Put (√) or (x):		
 By heating water, it changes into ice. 	()
When water gains thermal energy it changes into water vapor.	()
 Complete the following sentences: When matter gains thermal energy, its particles move		*****

In the Assessment Book : Try to answer : Self-Assessment 24

Exercises on Lesson 2

Understand

O Apply

Higher Thinking Skills

d. reduce

1	Cl	noose the correc	t answer:			
•	1.	Freezing of liqui a. high	d chocolate needs b. low	c. warm	d. very high	
	2.	a. physical chanb. chemical chanc. both physical	-	nges.		
	3.	In freezing proce a. move with hig c. move with low	•			
	4.		hanges the matter b. liquid – gas			(Cairo 2023)
	5.	When we boil was a condense.		c. melt.	d. evaporate.	(Cairo 2024)
0	6.	When ice cubes a. sound	gain energy b. potential		ter. d. thermal	
	7.	a. melting only.	es of matter include and freezing.	b. freezing only.	·	ayoum 2 023)
	8.	a. have low ene	emperature of a margy. rgy. v energy.	b. have high ener	rgy.	
-	9.	Ice is turned into a. solid state	b. liquid state	· ·	een 0°C and 100 d. water vapor)°C.
Ç	10.	·	rature of water is do			***********
6	11.	a. melting and fr	ses which need he eezing. vaporation.	b. melting and co	ndensation.	
0	12.	To change wate	r from solid state to rature.	o liquid and then to	o gas state, we r	need to

c. decrease

b. increase

a. fix

Ĭ	13	. The two processes	s wnich cause pa	articles of matter get close	e together are		
		a. freezing and co	ndensation.	b. freezing and melting.			
		c. freezing and eva	aporation.	d. melting and condensa	tion.		
1	14	. In cold weather, dr	rops of water are	on the windows of	houses. (Giz	a 20)23)
		a. melted	*	b. evaporated			
		c. condensed		d. freezed			
2	C	hoose from column	(B) what suits i	t in column (A) :	-		
1		(A)		(B)]
	1	. Condensation	a. is the change	of water from solid state	to liquid state	Э.	
	2	. Melting		of water from gas state t			
	3	. Freezing	_	of water from gas state t	•		
		. Evaporation		of water from liquid state of water from liquid state	_		
	Ľ.	- Evaporation	c. is the change		TO SUNG STATE	;. —	
	1.	केक्ष्रिकेशस्त्र व्यव (१५६४	2	3	4		
3	PI	ut (🗸) or (X) :					
•	1,	When ice is heated	d, it will freeze.		(Glza 2023)	()
•	2.	When a solid matte	er gains thermal	energy, it will change into	liquid state.	()
•	3.	Freezing takes pla	ce by cooling, w	hile melting takes place b	y heating.	()
•	4.	Melting and freezing	ng are reversible	processes.		()
•	5,	Water remains liqu	id between 0°C	and 100°C.		ì)
•	6.	Freezing means th	at matter change	es from solid state to liquid	d state.	()
-			-	atter changes from liquid		`	•
		to gas state.				()
	8.	When hot water va	por hits cooler a	ir it forms steam.		()
1	9.	Increasing tempera	ature means that	particles of matter have I	ow		•
		thermal energy.				()
Ţ	10.	When the particles	of matter move	with high speed, its tempe	erature		
		will decrease.			(Cairo 2023)	()
1	11.	When chocolate me	elts, its particles	get closer together.		()
							-

4	Complete the following sentences using words below: (reverse – thermal energy – water – physical)	
•	When heating an amount of water it gains that makes its prove more faster.	particles
Į	 Melting is the process of freezing. Chocolate melts when exposed to high temperature, this change is change. 	called
•	4. 0°C is the freezing point of	
5	Write the scientific term of each of the following:	
•	They are changes in matter which are usually reversible and	
	don't affect its structure. (Damietta 2023)	()
	2. It is the process by which the particles of matter gain energy	
	and changes from solid state to liquid state. (Cairo 2023)	()
	3. It is the process by which the particles of matter lose energy	
	and changes from liquid state to solid state. (Alex. 2023)	()
	4. The state of water when its temperature is between 0°C	
	and 100°C.	()
6	Complete the following sentences :	
	Matter can be changed from one state to another by changing its Solid state is turned into liquid state by process.	
•	3. Liquid state is turned into solid state by process.	
•	4. By changing the of matter, its particles speed will change.	
	5. By decreasing the temperature of water vapor, it releases	energy (Alex. 2023)
	When a chocolate cube is exposed to sun rays, its temperature will and it will become liquid.	
į.	When we put a bottle containing water in freezer its temperature will and becomes solid.	(Luxor 2023)
	Water can change from the liquid state to state by increas temperature.	ing its
Í	9. The movement of particles of matter increases in case of processes.	and
	10. The distance between particles of water is very small in case of its state.	***************************************

7	Give reasons for :
	1. When the temperature of ice cubes increases, they melt. (Dakahlia 2023
	······································
	2 Both melting and freezing processes are considered as physical changes
Ī	2. Both melting and freezing processes are considered as physical changes.
1	Formation of water drops when water vapor touches a cold surface.
	W/L - 1
0	What happens to?
	1. The particles of water when its temperature is decreased below 0°C.
	2. The particles of water when we increase its temperature above 100°C.
9	Use the following pictures to complete the following sentences to explain
1	melting and freezing processes : (Minia 2023)
	Picture (A) Picture (B) Picture (C) Picture (D)
	1. During melting process, picture () changes into picture ()
	with the help of the device in picture ().
	2. During freezing process, picture () changes into picture ()
	with the help of the device in picture ().

LESSON THREE

Activity 6 Mixtures

▶ Put (√) or (x):

- When mixing salt and water, the salt loses its salty taste.
- You can see the components of fruit salad by your eyes.
- · Most things in nature are "Mixtures", but there are other things in our world known as "Compounds".

Mixtures and Compounds

Mixture	Compound
 A mixture is a matter formed of two or more materials (substances). 	A compound is a matter formed of two or more materials (substances).
 The materials (substances) that form a mixture don't combine chemically and mixing them does not change them into new substances. 	 The materials (substances) that form a compound combine chemically to form a completely new substance.

Mixtures can be made of

Solid materials

Solid and liquid materials





Gas materials





Example: Sand and rocks

You mix an amount of apple juice with an amount of orange juice.

A mixture of apple juice and orange juice is formed, which don't combine chemically and both apple juice and orange juice keep their taste and properties.

components مكوبات 220 combine keep

V Note

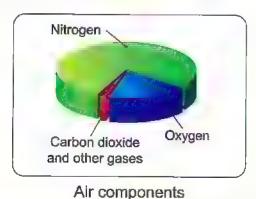
Components of some mixtures :

 Can be seen by eyes, such as the components of a mixture of nuts.



Mixture of nuts

 Cannot be seen by eyes, but we need special equipments to see its components, such as the components of air that is formed of some gases.



Properties of mixture

- · It consists of two or more materials.
- All materials that form a mixture don't combine chemically.
- · Each material in a mixture keeps its properties that you can use to identify it, such as :
 - Sugar does not lose its sweetness when it is dissolved in water.
 - In fruit salad, you can identify each type of fruit in the fruit salad.
- The components of a mixture can be separated after mixing them.

Separating mixtures

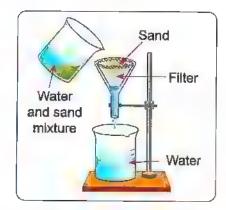
There are many methods to separate the components of mixtures, such as :

Filtration:

A filter can be used to separate a mixture if one material in the mixture is a solid that does not dissolve in a liquid.

Example:

Separating sand from a mixture of water and sand.

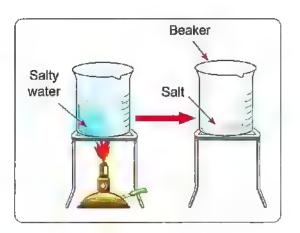


Evaporation:

Evaporation can be used to separate a solid material that dissolves in a liquid, where the liquid evaporates by heating.

Example:

Separating the salt from a mixture of salty water, by heating the salty water, the water will evaporate leaving the salt in the beaker.



Check your understanding

Complete using the words between brackets:

(solid - compound - filters)

- 1. The matter that is formed of two materials or more that are combined chemically is called a
- 2. We can use to separate a mixture that one of its materials is a solid that does not dissolve in a liquid.
- 3. Sand and rocks are a mixture that is made of materials.

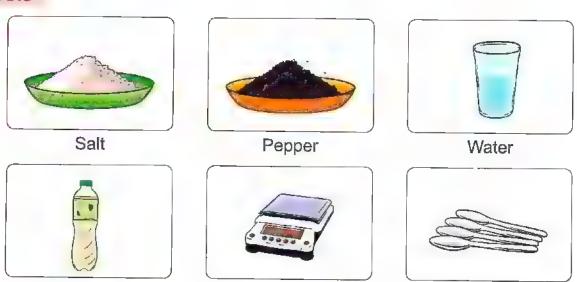
Activity 7 Mixing It Up with Mass

- You have learned that when we mix substances, mixtures or compounds are formed.
 So, when mixing substances, what happens to their masses after mixing when their properties change and when their properties don't change?
- To answer these questions, we can do the following experiments.

Experiment 1

To show what happens to masses of substances after mixing when their properties don't change after mixing.

Tools



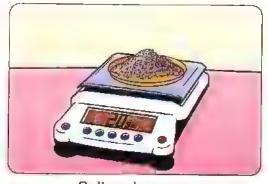
Balance

Steps

1. Weigh 10 g of salt and 10 g of pepper using the balance.

Oil

Mix the salt and pepper together using a spoon, then weigh the mass of this mixture and compare between the summation of their masses before and after mixing.



Spoons

Salt and pepper

• Observations

- The summation of their masses before mixing equals the summation of their masses after mixing.
- The properties of the substances don't change after mixing.
- 3. Weigh 10 g of water and 10 g of oil using the balance.
- 4. Mix the water and oil together using a spoon, then weigh the mass of this mixture and compare between the summation of their masses before mixing and after mixing.



Water and oil

Observations

- The summation of their masses before mixing equals the summation of their masses after mixing.
- The properties of the substances don't change after mixing.
- Weigh 10 g of salt and 10 g of water using the balance.
- 6. Mix the salt and water together using a spoon, then weigh the mass of this mixture and compare between the summation of their masses before mixing and after mixing.



Salt and water

Observations

- The summation of their masses before mixing equals the summation of their masses after mixing.
- The properties of the substances don't change after mixing.

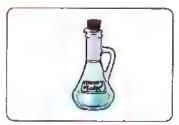
Conclusion

The masses of substances before mixing are equal to the masses of these substances after mixing when their properties don't change (when forming a mixture).

Experiment 2

To show what happens to masses of substances after mixing when their properties change after mixing.

Tools



Vinegar



Baking soda



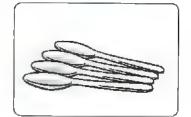
lodine



Cornstarch



Balance



Spoons

Steps

- Weigh 10 g of vinegar and 10 g of baking soda using the balance.
- Mix the vinegar and baking soda together using a spoon, then weigh the masses of them after mixing and compare between their masses before mixing and after mixing.



Vinegar and baking soda

Observations

- The summation of their masses before mixing equals the summation of their masses after mixing.
- A gas formed causing bubbles which means that the properties of the substances change after mixing.
- Weigh 10 g of cornstarch and 10 g of iodine using the balance.
- 4. Mix the cornstarch and iodine together using a spoon, then weigh the masses of them after mixing and compare between their masses before mixing and after mixing.



Cornstarch and iodine

Observations

- The summation of their masses before mixing equals the summation of their masses after mixing.
- A compound formed and its color is dark blue which means that the properties of the substances change after mixing.

Conclusion

The masses of substances before mixing are equal to the masses of these substances after mixing when their properties change (when forming a compound).

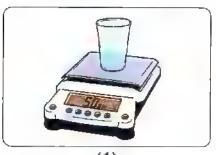
From all the previous experiments, we can conclude that :

The total masses of substances after mixing is equal to their total masses before mixing even if their properties change as they react with each other.

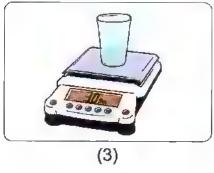
Check your understanding

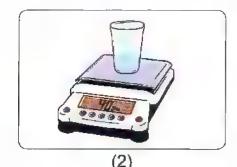
Choose the correct answer:

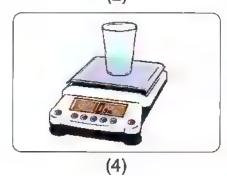
The balance that represents the correct mass of a mixture of 10 g of salt and 30 g of water is balance number











In the Assessment Book : Try to answer : Self-Assessment (25)

Exercises on Lesson 3

Understand

O Apply

Higher Thinking Skills

	C	hoose the correc	t answer :		
	1.	Among mixtures of	s which are made ι	up of solid material	s only is the mixture
		a. salt and waterc. suagr and water		b. sand and rocksd. oxygen and he	
	2.		arated by of some	-	(Damietta 2023) d. condensation
	3.		g soda to vinegar, b. compound		d. solid matter
	4.	By adding iodine	e to starch, the colo	or of the formed co	empound will change
		a. dark blue.	b. dark green.	c. orange.	d. yellow.
	5.	If we mix two eq mixing.	ual masses of salt	and oil so, their to	tal mass will after
		a. equal to zero	b. decrease	c. increase	d. not change
	6.	To separate san	d only from salty w	ater, we can use	process. (Cairo 2023)
		a. filtration	b. evaporation	c. melting	d. freezing
	7.				hat its components
		a. combine chen	nically. ir shapes.	b. form new subst	
	0	_	•	_	chemically or physically.
		a. mass only	ne will not change	b. color only	starcn.
		c. color and mas	ss.	d. properties and	mass
	9.		f water and 6 g of s		them the mass of whole
		a. 15	b. 10	c. 12	d. 6
1		If we mix 150 g of be g after r		g of apple, the mas	ss of banana only will
		a. 50	b. 100	c. 200	d. 150

7	1	P	ut (🗸) or (X) :		
4		1.	We can use evaporation process to form mixtures.	()
-	•	2.	The properties of the components of a mixture change after mixing		
			them with each other.	()
		3.	Evaporation and filtration are ways of mixtures separation. (Cairo 2023)	()
9		4.	The substances that form a compound combine physically forming		
			a new substance.	()
		5.	By adding iodine to starch, their masses and color will not change.	()
ĺ	,	6.	You can see the different components of the salty water.	()
		7.	Sand and rocks mixture is considered from solid and liquid mixtures.	()
j	7	8.	The mass and properties of oil will change when mixing it with vinegar.	()
		9.	The properties of mango will be the same if we mix it with banana.	()
-	1	0.	By mixing some vegetables together their properties will change.		
			(Beheira 2024)	()
	1	1.	If we add 10 g of salt to 5 g of pepper, the mass of mixture will be 15 g.	()
-	1	2.	The mass of 50 g of sugar will decrease by adding it to 100 g of water.	()
=		C	omplete the following sentences using the words below:		
			(dissolves – filtration – the same – gas)		
	•	1.	To separate sand from a mixture of water and sand we can use		
			process.		
	•	2.	The evaporation process can be used to separate a solid material that		
			in a liquid.		
1)	3.	Mixing vinegar and baking soda cause the formation of a		
1		4.	The mass of salt in salty water will be after the mixture is formed		
Z		W	rite the scientific term of each of the following:		_
		1.	A matter that is formed when two or more materials combine		
			chemically. (Assiut 2023) (.)
•	•	2.	It is the substance that consists of more than one matter and		
			don't have any chemical change in their properties. (******	.)
	3	C	omplete the following sentences :		_
		1.	When two substances combine and form a new substance, this new subst	ance	3
			is called a(Giza	2024	1)
		2.	The mass of a mixed substance will not be changed during formation of the but their properties will be changed		

•	 By adding iodine to starch, their will change into dark bl a new compound. 	ue forming		
	4. By mixing salt with pepper, a mixture is formed which has no change in the			
	By adding baking soda to vinegar, the properties of the formed subsection.	bstance will		
	6. Salty water is a mixture that consists of salt which is a state of matter.	tate of matter (Cairo 2024)		
6	7. To separate mud from salty water we can use process.	(Alex. 2023)		
	8. To separate salt from salty water we can use process.	(Menofia 2023)		
6	Give reasons for :			
1	Fruit salad and salty water are considered as mixtures.	(Gıza 2023)		
1	Filtration process is used to separate soil from water.			
7	3. By adding baking soda to vinegar the properties of each of them a			
7	What happens to?			
,				
	1. Salty water if heated for a long time.	(Minia 2023)		
	2. The mass and properties of sugar when adding it to an amount of	flour.		
8				
¢	Look at the opposite mixture, then put (\checkmark) or (x) :			
	Look at the opposite mixture, then put () or (x): 1. The components of this mixture combine chemically.			
	The components of this mixture combine chemically. The components of this mixture are solids			
	The components of this mixture combine chemically.			

Mention the state of matter which forms the following mixtures by using the words below:

(Solid and liquid - Gas - Solid - Liquid)



1. materials.





2. materials. 3. materials.



10 Look at the following figures, then choose the correct answer:

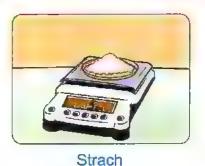


Figure (A)



Figure (B)



Strach + lodine Figure (C)

- 1. The mass of starch in figure (C) equals
 - (5 gm 10 gm 15 gm)
- 2. The mass of iodine in figure (C) equals
- (5 gm 10 gm 15 gm)

(the same of figure (A) – the same of figure (B) – changed into new color)

4. The produced substance in figure is called compound. (A-B-C)

LESSON FOUR

Activity 8 Physical Changes In Our Lives

Choose the correct answer:

Which of the following does not produce a new substance?

(Cutting some fruits and mix them together - Mixing vinegar and baking soda)

- Physical change is a type of changes that may occur to different materials around us.
- You have learned that physical change is a change in matter without any change in its structure.
- Physical changes don't form somethings new (new substances) but they can change size, shape or state of matter.

Examples of changes in our lives

Physical changes

Not physical changes

Paper 1

Cutting a paper into small pieces.



Burning a paper forming ash.



In cooking j

Making salad:

Cutting vegetables don't make them different but they have the same taste with changes in their sizes.



Making bread:

- The baker mixes flour, water, sugar and yeast, then the baker bakes them.
- The taste of the bread is not like its ingredients.



burning فات baker خباز yeast



Give a reason for:

Cutting a paper into small pieces is considered as a physical change.

Because cutting a paper is a change of the shape of paper without any change in its structure.



1. Melting wax is a physical change.



When some metals react with oxygen, they lose their shining and this change is not a physical change.



Che Che

Check your understanding

▶ Put the following changes in the correct place in the table below : (Making fruit salad – Melting ice – Burning clothes – Cutting pieces of cloth – Losing shining of a metal)

Physical changes	Not physical changes		

Þ	Put	(\()	or	(x)	
---	-----	--------------	----	-----	--

- Melting of wax is not a physical change.
 (
- 2. Cutting a piece of paper is a chemical change while burning a paper is a physical change.()

Activity 9 Chemical Changes

In the previous activity, you have learned that there are some changes that happen
to matter which are called physical changes and there are some other changes
which are not physical changes. In this activity we will know that the "not physical
changes" are called "chemical changes".

Chemical change:

It is a change in matter with a change in its structure producing a new matter (substance).

- Chemical changes differ from physical changes, where chemical changes are not reversed easily.
- The new matter (substance) which is formed due to the chemical changes has some properties, where :
 - This new substance is different physically from the original substances such as its shape, color etc.
 - This new substance has different chemical properties that differ from the chemical properties of the original substances.

Some examples of chemical changes:

- 1. When iron combines (reacts) with oxygen and water, they form rust.
 - * Rust is a chemical substance called iron oxide which is a layer with reddish color.



Rusting of a vehicle



Rusting of an iron nail

- 2. When oxygen combines with carbon and hydrogen, they release heat that can start a fire.
 - * The fire can change substances as wood into ash.



3. When vinegar combines with baking soda, they form gas bubbles.



4. Digestion of food inside your body takes place as a result of some chemical changes, where chemicals produced in your body help in the food digestion.



Check your understanding

Complete the following sentences using the words below:

(rust - oxygen - chemical - water)

- 1. The iron combines with and forming rust.
- 2. The changes that are not reversed easily are changes.
- 3. When iron toys are left out in rain,is formed.

Activity 10 How Has It Changed 3

- You have learned that there are two types of changes of matter that happen around us in our daily life which are physical and chemical changes.
- The following evidence can be used to differentiate between the physical and chemical changes.

Some evidence that describes physical changes

Change in shape and size

Examples:

 Cutting a paper.

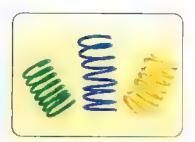


· Cutting a fruit.



Coiling

 a straight
 piece of wire
 to form
 a spring.



 The flow of sand in an hourglass changes the shape of sand in the container.



Expected change in color

Examples:

 Adding drops of food colors to a cup of water.



 Coloring a paper.





Change in state of matter

Examples:

 Melting of a piece of chocolate.



 Evaporation of water.



▶ From the previous examples, we can conclude that physical changes don't produce new substances.

Some evidence that describes chemical changes

Unexpected color change

Example:

When mixing iodine with cornstarch, a new substance is formed and its color is dark blue.



lodine with cornstarch

Formation of gas bubbles

Example:

When mixing baking soda with vinegar, gas bubbles appear.



Baking soda with vinegar

Formation of strong odor

Example:

Leaving a cup of milk out of the fridge for about two days can produce a bad smell.



Bad smell of milk

▶ From the previous examples, we can conclude that chemical changes produce new substances.



Complete the following table of changes:

Change	Physical or chemical change	Evidence	
- Melting a piece of butter.	Physical		
- Frying an egg.		Because cooking process cannot be easily reversed.	
- Painting a piece of wood.			
 A bread is left in an oven for a long time that it smells like something burned. 			

In	the	Assessment	Book	÷
Tŋ	y to	answer:		
Q _c	H.A.	Pagamant (28)		

Exercises on Lesson 4

Understand

Apply

Higher Thinking Skills

1	Choos	e the correct answer:		
	a. ca	nail will rust when it reacts with arbon dioxide and water. xygen and vinegar.		
	a. oı	ning of a paper is considered a nly chemical oth physical and chemical	s change of matter. (ab. only physical d. neither physical nor chemical	Menofia 2023)
	a. m	ong examples of physical chang elting of iron. aking a cake.	ges is . b. burning of wood. d. digestion of food.	(Cairo 2023)
	mixi a. ba	ong chemical unexpected color ng aking soda with vinegar. ood colors with water.	b. iodine with cornstarch. d. salt with water.	ced from
	a. bi	n the changes that don't form a urning of paper. aking bread.		
	6. Amo a. cı	ong chemical changes that occurrence that occu	b. boiling of water.	Beheira 2024)
	a. cı	he following examples belong to utting a piece of paper. gestion of food.	b. melting of ice. d. condensation of water vapor.	
	prod a. m	change that is produced as a duced from nelting of ice. utting a piece of cloth.	result of iron rusting is the same of b. making bread. d. breaking of glass.	change (Alex. 2023)
	9. Exp a. fr c. a	osing an amount of salty water eezing of water. chemical change to water.	to sunlight for a long time causes b. formation of a new substance. d. a physical change to water.	
d	10 Whe	en oxygen combines with carbo	on and hydrogen energy is	produced.

c. kinetic

d. solar

b. thermal

a. electrical

•	11. All the following are example: a. cutting a paper.	s of physical changes in size, except b. cutting a piece of banana.		
	c. coloring a piece of paper.			
		sidered as a chemical change that occurs to		
	a. Coiling it.	(Cair	O 20	024)
	c. Cutting it into pieces.	b. Coloring it. d. Burning it.		
2	Choose from column (B) what s	suits it in column (A) :		
	(A)	(B)		
	Expected change in color	a. cutting a tomato into small pieces.		_
	2. Formation of strong odor	b. adding drops of food colors to a cup of w	/ate	r.
	3. Change in size	c. mixing iodine with cornstarch.	41	
	4. Unexpected change in color	d. leaving a cup of milk out of fridge for a longe. mixing salt with water.	tim	e.
	1	3 4		
3	Put (✓) or (X) :			
	1. When dissolving salt in water,	the salt disappears forming		
	a new substance.		()
	2. During chemical change, the	properties of the matter will be changed.	()
ľ		ng of paper is considered as a change	`	,
	that forms a new substance.	•	()
	4. Melting of wax produces new	substance.	()
	5. Cutting a piece of cloth is con	sidered as a physical change because	*	•
	it produces a new substance.	(Assiut 2023)	()
	6. Burning of wood is a chemica	change.	()
y	7. Rusting of iron doesn't change	e the structure of iron. (Kafr El-Sheikh 2024)	()
	8. We can separate baking soda	from vinegar easily after mixing		,
	them together.	(Alex. 2023)	()
	9. Their is a change in shape wh	en you coil a piece of paper.	()
1	10. When living a cup of milk out o	of the fridge for a long time, it will form	•	
	a new substance.		()

4	Complete the following sentences :
	1. Cutting a paper into pieces is considered as a change, while burning
	it is considered as a change. (Assiut 2023)
	The reaction between some metals and gas causes loss of their shining, and this reaction is considered as a change of matter.
	The change in the structure of the original matter producing a new matter is known as change.
d	4. Melting of wax is a change, while burning of wood is a change.
1	5. Boiling of water to form water vapor is considered as a change.
<u>, </u>	6. Digestion of food forms a new which has new
	7. Changing the color of iodine and starch mixture is a
4	8. Iron rusting is a change, while iron painting is a change.
-	9. Making yoghurt from milk is a change. (Giza 2023)
	Give reasons for :
	Making bread is considered as a chemical change.
	Formation of a layer with reddish color on the surface of a wet iron wire after a period of time.
	3. Formation of a bad odor when milk is left out of the fridge for several days.
Č	4. Making fruit salad is considered as a physical change. (Carro 2023)
E	What happens if?
	1. We mix iodine with cornstarch. (Gharbia 2023)
	Oxygen, carbon and hydrogen are combining together.

	3. You expose a shiny piece of metal to air (oxygen) for a long period of time.

As shown in the diagram, the balloon inflates when the baking soda in the balloon is mixed with vinegar. What causes this to happen? (Gharbia 2023)	Baking soda Vinegar	Ballon
Ships body which are made of iron exposed to	o damage due t	to a type of change
that you are studied.		
1. What is the type of change that takes place '	?	
2. When iron reacts with and,	6	
the body of ship loses its shining as	1	State of the state
a result of iron (complete)	
2 Look at the opposite figure, then answer:		
1. What will happen to the ice cube?		lce cube Burning spoon
***************************************		lame
	'	
2. What is the type of change ?		
(Give a reason for your answer).		
	***************************************	***************************************
10 Look at the opposite figures, then answer :		
1. What is the type of change in figure (1)?		
	Dough	Baking bread
2. In which figure we can reverse easly	Fi	igure (1)
the change process and why?		
		→ Ø
	Paper	Folded paper

Figure (2)

LESSON FIVE

Activity 11 Record Evidence like A Scientist

- ▶ In this concept, you have learned a lot about what happens to the matter when it is heated, cooled or mixed with other substances.
- Now, try to think like a scientist by writing your claim, your evidence and your scientific explanation about one of the main points of this concept through the four steps you have learned in the previous concepts.

? Step 1 The Question
What happens to the mass of a substance when it is heated, cooled or mixed with other substances?
My Claim
My Evidence

My Scientific Explanation

Activity 12 S T Min Action

Plenty of water, but none to drink

- Although about 70% of the surface of the Earth is covered by oceans, many people around the world cannot reach fresh water.
- This is because the water of oceans and seas is considered as a mixture of water, salt, other minerals, gases, living organisms and dead organisms, so this water is not suitable for drinking.



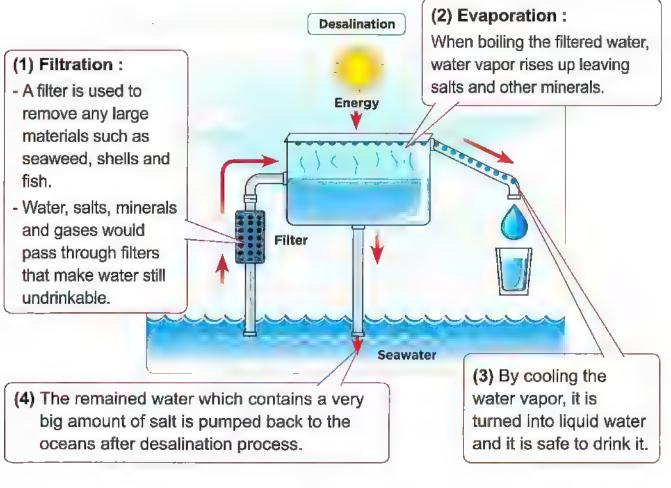
• But we can use desalination processes to drink the water of seas and oceans.

Desalination:

It is the process of removing salt from water.

▶ How do we separate fresh drinkable water from the mixture of ocean's water?

We can separate the components of the oceans water as follows:



Problems of desalination

- It requires a lot of energy.
- · It is a very expensive process.
- It may lead to environmental problems such as :
 - Small marine organisms can be hurt due to sucking of water into the desalination plants.
 - The water that contains a very big amount of salt that is pumped back to oceans after desalination, can be dangerous to the marine life.

Notes

- 1. Drinking salt water makes the human body dehydrate faster which means that the human body loses water faster.
- Egypt has over 80 desalination plants.

Check your understanding

Put (√) or (x):

 We use desalination process to remove salt from water. 	()
2. We can drink salt water.	()
Desalination does not have any disadvantages.	()
4. Egypt does not have any desalination plants.	()

Review on Concept [2-3]

To review this concept look at the Assessment Book "Part 2: Final Revision".

In the Assessment Book:

Try to answer:

- Self-Assessment (27)
- Model Exam on Theme (2)

يفقد الماء

Exercises on Lesson 5

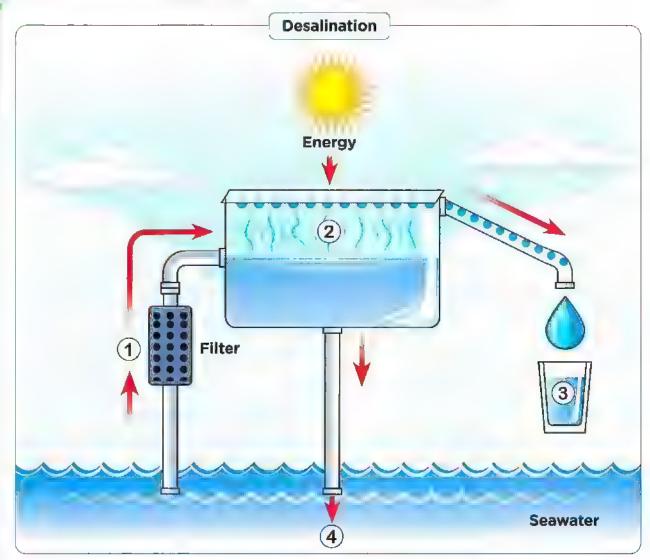
• 01	nderstand	O APPBOY
el el		

Higher Thinking Skills

Choose the correct answer :		
People cannot drink the water of o water and	ceans and seas because it	is a mixture of
a. salt only.	b. minerals only.	
c. living organisms only.	d. salt, minerals and living	organisms.
2. Desalination process means that v	ve remove from wate	r to drink it.
a. sugar b. salt	c. oxygen gas d. hydro	gen gas
		(Cairo 2023)
We can use processes to se of seas and oceans.	parate fresh drinkable wate	er from the water
a. filtration and rusting	b. evaporation and colorin	g
c. filtration and coloring	d. filtration and evaporatio	n
4. To separate salt and minerals from	seawater, we can use	process.
a. evaporation b. melting	c. freezing d. rustin	(Giza 2023)
5. We can use filtration process to re except	move all the following from	sea water,
a. seaweed. b. salt.	c. shells. d. fish.	
6. All the following is from the problem	ns of desalination, <u>except</u> t	hat
a. it needs a big amount of energy.		
b. it needs a small amount of energ	gy.	
c. it is very expensive process.		
d. it may cause many environment	al problems.	
Put (✓) or (X) :		
Water of oceans and seas is consi	dered as a mixture hecause	e it consists of
water, minerals and gases.	dorod do a mixturo booldo.	()
2. We can use melting process to ma	ke the water of seas and or	ceans
drinkable.		()
3. All people around the world can rea	ach fresh water easilv.	()
4. To get drinkable water from salty w	•	rocess only.
		(Menofia 2023) ()

	5. Drinking salt water makes the human body dehydrate slowe	er. ()
(6. After evaporation of seawater, the water vapor turns into liqu	uid water by cooling.
		()
4	7. Among environmental problems that are caused by desalina	ation process is that
	it is a very expensive process.	()
E S	Write the scientific term of each of the following:	
-	1. The process of removing salt from salty water. (Ale	ex. 2023) ()
-	2. The process which can be used to remove any large materia	als from sea and
	ocean water.	(
-	3. The process which can be used to separate salt and minera	ls from salt
	water of seas and oceans. (Cai	iro 2023) ()
_	4 Complete the following sentences using the words below :	
	(salt – filtration – energy – marine – fresh – oceans – expe	ensive – seas)
		•
	1. Among the problems of desalination process is that it require and it is very process.	es a lot or
Ì	2. After desalinating water, the water that is pumped back to or large amount of which can harm the life.	_
	3. We can drink water, so we cannot drink the water	
	and	OI
	4. We can remove seaweed, shells and fish from ocean's water	ar by using
	process.	(Beni Suef 2023)
		(30111 0001 2020)
E	Give a reason for the following :	
Ī	We cannot drink the water of oceans and seas.	(Dakahlia 2023)
	, , , , , , , , , , , , , , , , , ,	
		•••••••••••••••••••••••••••••••••••••••
6	6 What happens if?	
No.	You boil an amount of seawater for a long time.	
	and the second s	

Look at the following figure, then choose the correct answer:





On Concept [2.3]

Total	mark
1	5

(A) Complete the following sentences	using the words below:	(5 marks)
(compounds – tempera	ature – chemical – new)	
1. Matter can be changed from one sta	•	
2. The mass of mixed substances will r	not be changed during formatic	
3. Making salad doesn't produce		
4. Making yoghurt from milk is a		
(B) Give a reason for the following:		
Both of melting and freezing process	es are considered as physical	changes
(A) Choose the correct answer :		(5 marks)
1. When the water is heated, its particle	es	(o mar nay
a. move faster.	b. move slower.	
c. move with the same speed.	d. don't move.	
2. Exposing an amount of salty water to	sunlight for a long time cause	es
a. freezing of water.	b. formation of a new subs	
c. a chemical change to water.	d. a physical change to wa	ater.
3. Desalination process means that we	remove from water to di	rink it.
a. sugar	b. salt	
c. oxygen gas	d. hydrogen gas.	
4. The of iodine will not change a	fter mixing it with starch.	
a. mass only	b. color only	
c. color and mass	d. properties and mass	
(B) What happens to?		
The mass and properties of sugar wh	en it is mixed with an amount	of flour.

3 (A) Put (✓) or (X):		(5 marks)
1. Melting and freezing are reversible p	rocesses.	()
2. Particles of solid matter are spread o	ut from each other.	()

Comparing	Changes	ìn	Matter
-----------	---------	----	--------

Melting of wax produces new substance.	()
4. After evaporation of seawater, the water vapor is turned into liquid water by cooling.	er (١
(B) Write the scientific term of each of the following:	(,
1. A matter that is formed when two or more materials combine chemicall	у.	
(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.)
2. The process of removing salt from salt water. (******)



(A) Choose from column (B) what suits it in column (A):

On Concept [2.3]

Total	mark
1	5

(5 marks)

(A)	(B)		
1. Expected change in color.	a. cutting a tomato into small pieces.		
2. Fromation of strong odor.	 b. adding drops of food colors to a cup of water. 		
3. Change in shape and size.	c. mixing iodine with cornstarch.		
. Unexpected change in color.	d. leaving a cup of milk out of fridge for a long time.		
	e. mixing salt with water.		
1	3 4		
· ·	or on the surface of a wet iron wire after		
(A) Put (✓) or (X):	(5 marks		
 An ice cream turns into liquid by coc 	oling. (
2. Water remains liquid between 0°C a	nd 100°C. (

(B) What happens if ...?

You leave an amount of salty water exposed to sunlight for several days.

4. To get drinkable water from salty water we can use filtration process only. (

3. Evaporation and filtration processes are ways of mixtures separation.

(A) Write the scientific term of each of the following:	(5 marks)
1. It is the process by which the particles of matter gain energy and	
changes from solid to liquid state.	()
2. It is the substance that consists of more than one matter which	
don't have any chemical change in their properties.	()

The process which can be used to remove any large mate ocean water.	erials from sea and
 They are changes in matter which is usually reversible an affect its structure. 	d don't (
(B) Look at the opposite figure, then answer:	
1. What will happen to the ice cube?	lce cube Burning spoon
2. What is the type of change ? (Give a reason for your answer)	Fiame —
	4



SCIENCE

Assessment Book

By A Group of Supervisors



Part |

Self-Assessments:

(Page 3)

Include:

- Cumulative self-assessments on lessons of each concept.
- Cumulative model exam on concepts.
- A model exam on each theme.
- Questions of the school book on each theme.
- Monthly tests.



Part 2

Final Revision:

(Page 53)

Includes:

Review on each concept.



Part 3

Final Examinations:

(Page 81)

Include:

- El-Moasser final examination models.
- Final examinations of some governorates.



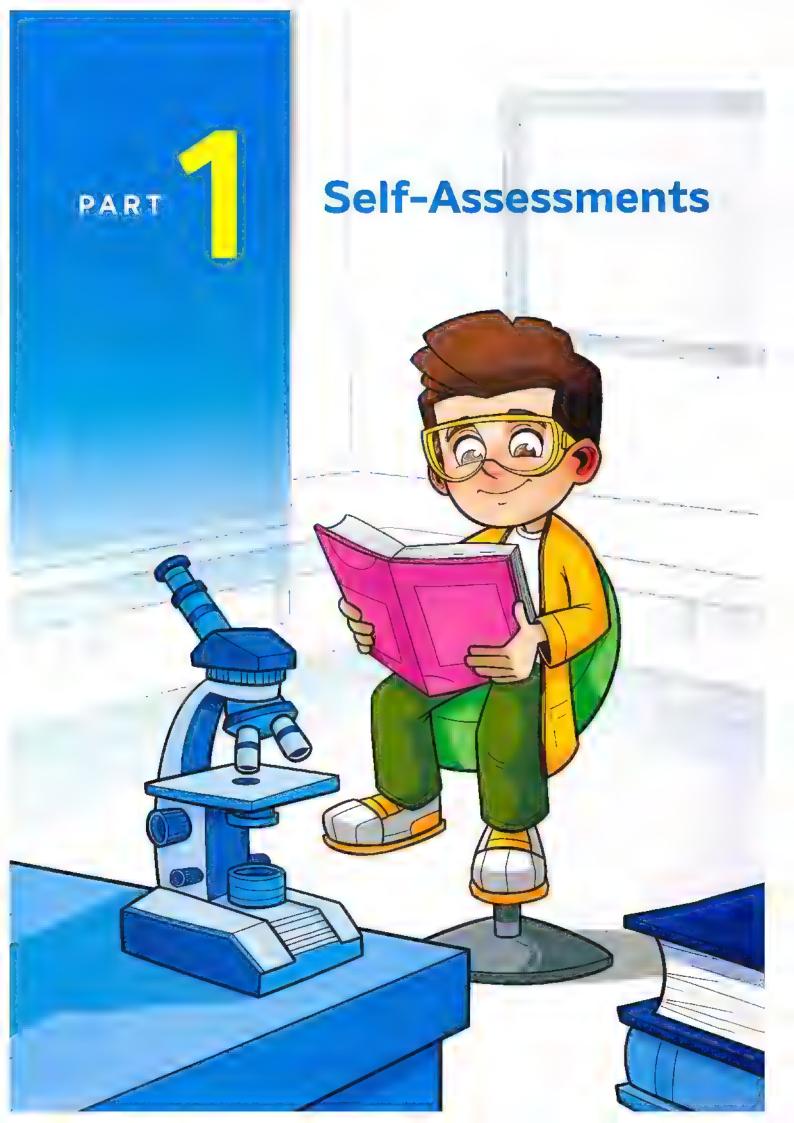
Projects

(Page 108)

Include:

- Unit one project.
- Interdisciplinary project.
- Unit two project.





THEME ONE: **Systems**

UNIT 1 Interactions of Organisms

Plant Needs:

- Self-Assessments			
from (1) to (5)	5 -	- !	Ç
Model Exam			
on Concept (1.1)		11	C

Energy Flow in Ecosystems:

- Self-Assessments	
from (6) to (9).	11 - 15
- Model Exam on Concep	ots
(1.1) & (1.2)	16 - 17

Changes in Food Webs:

- Self-Assessments from (10) to (13)	18 - 21
- Model Exam on Theme (1)	22 - 23
- Assess your learning. Questions of the school book on Theme (1)	24 - 25

THEME TWO: **Matter and Energy**

UNIT 2 Particles in Motion

2.1 Matter in the World Around Us:

	Self-Assessments			
	from (14) to (18)	26	-	30
_	Model Exam			
	on Concept (2.1)		_	31

Describing and **Measuring Matter:**

- Self-Assessments from (19) to (22)	32.	35
- Model Exam on Concepts	<i>V</i> _	00
(2.1) & (2.2)	36 -	37

2.3 **Comparing Changes** in Matter:

- Self-Assessments	
from (23) to (27)	38 - 42
- Model Exam	
on Theme (2)	43 - 44
- Assess your learning.	
Questions of the school book	
on Theme (2)	45 - 46
- Monthly tests	47 - 52

Self-Assessments

on Concept (1.1)

Self-Assessment 1 On Lesson 1

(A) Choose the correct answer:		
1. The plant absorbs water from the soil through its		
a. roots. b. stems. c. leaves. d. flowers.		
2. The substance which is produced by the plant during photosynthesis produced	ess	
is		
a. sunlight. b. water. c. sugar. d. carbon dioxide ga		
3. All the following substances are not important for the plant growth, except		
a. rocks. b. insects. c. flowers. d. air.		
(B) Give a reason for the following:		
Without leaves, the plants can't grow or survive.		
• • • • • • • • • • • • • • • • • • • •		
2 (A) Put (V) or (X):		
1. Plant leaves absorb carbon dioxide gas from air.	()
2. Animals, humans and plants have the same structure that help them to		
grow and survive.	()
3. Each part of a plant has its own function.	()
(B) What happens if?		
We cover the green leaves of the plant to prevent sunlight from reaching t	hem	٦.
Complete the following sentences using these words:		
(roots - stem - leaves - carbon dioxide)		
From the plant's structures that photosynthesis process takes place in are		
2. The plant's transfers water from the of the plant to its leave	S.	
3. In the absence of gas, the plant can't make its own food.		

Self-Assessment 2 till Lesson 2

(A) Put (V) or (X)	4			
	will die if we put them on a wet paper towel and p	orovida		
it with nutrients.	will die if we put them on a wet paper tower and p	Jiovide	(١
2. Plants can live v	vithout leaves		(, 1
	for the seeds to complete their growth.		(, 1
	· · · · · ·		(,
(B) Give a reason t				
Stem is an impo	ortant part for the plant.			
				,
***************************************			*******	
(A) Correct the un	derlined words :			
1. Leaves of plants	s are responsible for absorption of water from the			
soil.		(PP 40 P 40 A A A.)
2. Oxygen gas is a	basic need that the plant takes from the air to			
make its own fo	od.	(I # # # #10 4"0-4)
3. Reproduction m	eans that the plant sprouts and begins to grow			
from a seed.		()
(B) What happens	if?			
We put some be	an seeds in a place containing water and nutrien	ts for sor	me	
days.				

Choose from colu	mn (B) what suits it in column (A):			
(A) '	(B)			
1. Sugar	a. is not important for plants in their initial gro			
2. Water	b. is the plant food that gives it the energy to	grow.		-
3. Soil	c. is the gas that the plant gets it from air.			- 1
	d. is from the basic needs of the plant to sur	vive.		

Self-Assessment 3 till Lesson 3

(A) Correct the underlined words:	
Phloem in plant's leaves absorb the energy of sunlight.	()
2. There are tubes in the plant's root that help it to absorb more	
water from the soil.	()
3. The process through which the green parts of plants absorb	
sunlight to make their own food is called germination process.	(
(B) What happens to?	
The plant's leaves when the plant is placed in a cup containing c	olored water.

(A) Complete the following sentences :	
The of plant are responsible for absorption of water and rethe soil.	utrients from
In the presence of water, seeds can germinate at the beginning of without the need of	growth
3. The plant's supports leaves and flowers of the plant.	
(B) Give a reason for the following:	
There are tubes called phloem inside plant's leaves.	

3 Complete the following sentences using these words:	
(stomata – xylem – oxygen gas)	
1. Gases can move into or out of the leaves due to the presence of	
2. During photosynthesis process, will be produced from the	plant.
3. Water and nutrients can reach leaves of the plant through	



Self-Assessment 4 till Lesson 4

(A) Choose t	he correct answer:				
1. Gases ente	er plants through	*********			
a. leaves.	b. stems.	c. roots.	d. flowers.		
2. Arteries ca	rry blood rich in	from the hear	t to all the body cells.		
a. carbon d	lioxide gas	b. oxygen ga	s and glucose sugar		
c. oxygen a	and carbon dioxide	gases			
d. carbon d	lioxide gas and glud	cose sugar			
3. Flowers pro	oducefor re	eproduction.			
a. leaves	b. stems	c. seeds	d. roots		
(B) Give a rea	son for the followi	ng:			
There is no	life on Earth in the	absence of plants.			
•					
1////					
2 (A) Put (V) o	- (v) .				
		oo and comptimes	Anna an farita	,	
	e roots, stems, leav			()
two ventric	n the human circula les	itory system consis	its of two atria and	1	١
		a green plants use	sunlight to combine	(,
	n water to make sug		suringrit to combine	(١
		,		`	,
(B) What happ		. In a live			
Roots of pia	ants don't have root	nairs.			
******		***************************************		,	••
3 Complete the	following sentence	es using these wo	rds:		
(phloe	m – xylem – veins	– nutrients – sug	ar – arteries – oxyger	n)	
			s carbon dioxide and a ody parts back to the h		
			plant parts are called .		
3. The tubes t	hat carry nutrients f	rom the roots to the	e leaves are called		
4. The vessels		ood rich in a	nd nutrients from the h	neart to)

Self-Assessment 5 till Lesson 5

1. Maple seeds have spines to stick to animal fur.	()
The heart in the human circulatory system consists of four chambers	i. ()
3. Flowers are important parts of plants that help them for reproduction.	. ()
(B) Give a reason for the following:		
Root hairs are important for plants.		
	••••••	
(A) Write the scientific term of each of the following :		
4. The existence exhibits in warm within for two constitutions.		
 The system which is responsible for transporting oxygen and 		× ×
	()
nutrients throughout the body.	((
nutrients throughout the body. 2. It means the transportation of seeds from one place to another.)
nutrients throughout the body. 2. It means the transportation of seeds from one place to another.	()
nutrients throughout the body. 2. It means the transportation of seeds from one place to another. 3. The process of producing new plants.	(())
nutrients throughout the body. 2. It means the transportation of seeds from one place to another. 3. The process of producing new plants. (B) What happens to?	(())
nutrients throughout the body. 2. It means the transportation of seeds from one place to another. 3. The process of producing new plants. (B) What happens to?	(())



Plant's seeds (1)



Plant's seed (2)

- 1. Plant's seeds number (1) can be dispersed by, because they are
- 2. Plant's seed number (2) can be dispersed by

Model Exam on Concept (1.1)



(A) Complete the following sentence	ces:	(5 marks
1. Plants absorb and	. from the soil through their	
2. There are three types of vessels i	n the human circulatory system wh	ich are
arteries, and		
3. Tree trunks and shrubs have		
4. Transport system in the plant con-	sists of two types of vessels which	are
and		
(B) Give a reason for the following		
Xylem in plant is a one-way vesse	el.	
7		
(A) Choose from column (B) what so	uits it in column (A) :	(5 marks)
(A)	(B)	
1. Coconut seeds	a. sticking to animal fur.	
2. Maple seeds and dandelion	b. floating on water.	
seeds	c. being eaten by animals.	
3. Burdock seeds	d. traveling by wind.	
4. Tomato seeds and apple seeds	e. staying inside flowers without r	novement
2		
	. 3 4	**
(B) What happens if?		
We remove the flowers of a plant.		

(A) Put (✓) or (X):		(5 marks)
1. Humans, animals and plants need	food and water to survive.	()
2. All seeds need soil in its initial gro	wth.	()
3. There are tiny holes opening on the		to pass
through into the plant.		()
4. Vines have climb stems.		()
B) Write the scientific term of each	of the following:	
1. It is found in the plant's leaves tha	_	hearhe
energy from the sunlight.	_	()
2. A substance that is produced from		
process and provides it with its ne		(

Self-Assessments

on Concept (1.2)

1. The hawk can find food in

c. both ecosystems (1) and (2).

a. ecosystem (1) only.

Self-Assessment 6 On Lesson 1

4	(A) Put (\(\sigma\) or (\(\chi\)):		
	1. There is no energy flow between the components of an ecosystem.	()
	2. Caracals eat mice to get their energy.	()
	3. All living organisms can do photosynthesis process.	()
	(B) Give a reason for the following :		
	Animals differ in the type of food they eat.		

2	(A) Complete the following sentences :		
	1. The energy we get from food originally comes from		
	2. An area contains living organisms and nonliving things that interact with e	ach ot	her
	3. Birds feed on worms to get their		
	(B) What happens to?		
	The body of a hawk after its death.		

20	Look at the following two ecosystems, then choose the correct answer	:	
	Christian Control of the Control of		
	Ecosystem (1) Ecosystem (2)		

b. ecosystem (2) only.

d. neither ecosystems (1) nor (2).

The light energy of the Sun can page a. ecosystem (2) in the absence of the sun can page a. ecosystem (2) in the absence of the sun can page a. ecosystem (2) in the absence of the sun can page a.		in
b. both ecosystems (1) and (2).		
c. ecosystem (1) only.		
d. ecosystem (2) only.		
3. Photosynthesis process occurs in	40,640,040,044	
a. both ecosystems (1) and (2).	b. ecosystem (1) only.	
c. ecosystem (2) only.	d. ecosystem (1) in the absence	of water.
(Self-Assessme	7 till Lesson 2	
(A) Choose the correct answer :		
1. Photosynthesis process, means		
a. making glucose in the absence		
b. making glucose in the presence		
c. using glucose to produce energ	•	
d. using salts to produce energy.	,	
2. If a spider eats a bee that feeds or	n a plant	
a, both spider and bee are primary		
b. both spider and bee are second		
c. the bee is a secondary consume		
d. the spider is a secondary consu		
3. The predator that feeds on a living		er living
organism.		
a. a decomposer	b. a producer	
c. a prey	d. a primary consumer	
(B) Give a reason for the following:		
Producers depend on light energy	of the Sun to grow.	
(A) Cross out the odd word :		
1. Producers – Consumers – Nonlivir	ng things – Decomposers.	(
2. Sunlight – Glucose – Consumers –		()
3. Fungi - Snakes - Millipedes - Bac		()

	ble using the words betw	reen brackets :
	ı – photosynthesis – livi	
Producers	Consumers	Decomposers
They can make their own food by process.	They are organisms that eat other to get their energy.	They recycle nutrients back into the ecosyste through the process of of dead organism
-0-18 6		
Self-Asse	essment 8 till L	esson 3
A) Choose the correct ans	wer:	
. The model that shows ma		different types of living
organisms is known as		unierent types of hving
	web. c. ecosystem.	d. habitat.
. All the following are basic		
a. water. b. food.		d. electricity.
. All the following are produ		or or or or or or or or or or or or or o
a. grasses. b. trees.		d. algae.
•		er diguo.
B) Give a reason for the fo		
In a food chain, a bird is r plants.	not considered as a secon	dary consumer if it eats
***************************************	***************************************	***************************************
N Cross see the little	•	
() Cross out the odd word	•	

(B) Study the following food chain, then complete the sentences below:

(B)	Use the followin	g living	organisms	to form	two :	food	chains	that	contain
	only one predate	or:							

(Deer - Lion - Grasses - Alligator)

3 Study the following three groups of living organisms, then choose the correct answer:

Group (A)	Group (A) Group (B)		
- Grasses	- Cows	- Grasses	
- Grapes	- Ducks	Foxes	
- Carrots	- Chickens	Hawks	
- Potato	- Rabbits	Rabbits	
- Tomato	- Goats	– Goats	

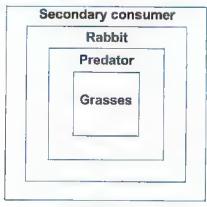
	·
1. Producers and consumers are fou	und together in
a. Group (A) only.	b. Group (B) only.
c. Group (A) or group (B).	d. Group (C) only.
2. Group (B) shows	
a. producers and decomposers.	b. consumer and decomposers.
c. primary consumers.	d. secondary consumers.
3. Energy can flow in a food chain, b	etween animals of
a. group (B) only.	b. group (C) only.
c. group (A) only.	d. group (B) or group (A).
4. Decomposers	
a. are present in group (A).	b. are present in group (B).
c. are present in group (C).	d. are not present in any group.
Self-Assessme	nt 9 till Lesson 4

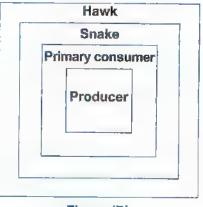
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1	CAY	Durt	1.1	OF.	(V)	4

1.	Plant-community ecologists can restore habitats for plants which are in	mporta	nt
	for all other living organisms.	()
2.	Producers can make their own food in the form of glucose sugar which		
	is rich with energy.	()
3.	Sticky seeds need water to be dispersed.	()

(B) Give a reason for the follow	ring:						
Light seeds are dispersed by	Light seeds are dispersed by wind.						
	··· ······· ······· ··················						
2 (A) Choose the correct answer :							
	o their studies and researches on						
a. plants only.	b. animals only.						
c. plants and animals.	d. producers and consumers.						
2. If a plant doesn't disperse its	seeds, so the number of this plant will						
a. increase.	b. decrease.						
c. not be affected.	d. be positively affected.						
3. All plants disperse their seeds	· · · · · · · · · · · · · · · · · · ·						
a. through wind only.	b. by sticking to animals bodies only.						
c. in many different ways.	d. through water only.						
(B) What happens if?							
Ecologists don't restore a dam	naged ecosystem.						

3 Study the following three figures that represent animals as squares where the bigger one can eat the smaller one, then choose which figure can express a food chain:





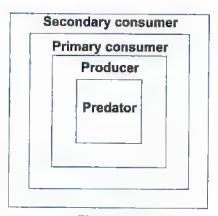


Figure (A)

Figure (B)

Figure (C)

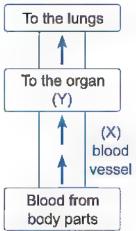
Model Exam on Concepts (1.1) & (1.2)



1	(A) Choose the correc	t answer:			(5 ma.	rks,		
	1. Winds play an important role in dispersingseeds.							
	a. floating	b. sticky	c. big heavy	d. small light				
	2 system in plants consists of tubes that water and nutrients move through							
	a. Digestive	b. Respiratory	c. Transport	d. Nervous				
	3. Any food chain start	ts with						
	a. insects.	b. fungi.	c. plants.	d. bacteria.				
	4. The kind of stems that extend underground are called stems.							
	a. climb	b. tuber	c. runner	d. wood				
	(B) What happens if?							
	All the primary consumers disappear from a certain food chain.							
	***************************************	,						
2	(A) Put (✓) or (X):			1	(5 ma	rks)		
	1. Photosynthesis process takes place in the plant's roots.							
	2. The food web describes energy flow and feeding interactions between living							
	organisms in an ecosystem.							
	3. At the beginning of germinating some bean seeds, they can grow without							
	soil or water.				()		
	4. Birds eat insects as	preys to get their	r energy.		()		
					_			

(B) The opposite figure to	the right represents a blood	vessel (X) that carries
the blood to an organ	(Y). Which answer represents	s (X) & (Y) ?

	(X)	(Y)
а	Artery	The heart
b	Vein	The brain
С	Vein	The heart
d	Artery	The lungs



(A) Write the scientific term of each of the following:

(5 marks)

(.....

- The gas that is present in air and necessary for the formation of plant food.

 (......)
- Small structures in the plant's roots that increase the absorption of water and nutrients from the soil.
- 3. A group of living organisms that can live on decaying dead organisms.
- 4. Parts of the plant that are responsible for reproduction. (.....)

(B) Study the following food web, then choose the correct answer:



- 1. When disappear from this food web, birds will move away to search for food in another ecosystem.
 - a. butterflies only

- b. worms only
- c. grasshoppers only
- d. primary consumers
- 2. Grasshoppers may die, when there is no
 - a. birds.
- b. snakes.
- c. plants.
- d. butterflies.

Self-Assessments

on Concept (1.3)

Self-Assessment 10 On Lesson 1

(A) Cro	ss out the odd word:	
1. Gras	ses – Algae – Sea stars – T	Trees. (
2. Clarr	ı – Zooplankton – Algae – S	Sea urchin. (
3. Shar	ks – Crocodiles – Snakes -	- Hawks. (
(B) Give	a reason for the following	g :
All fo	od chains depend on sunlig	ght.
7 (A) Cho	oose the correct answer :	
	arine food chains don't incl	udo
a. alg		b. zooplankton.
c. tig		d. sharks.
_		esert ecosystem, is due to
	ought condition.	b. decreasing producers.
	ntle rain.	d. heavy rain.
_		from a marine ecosystem, will be
	tively affected.	• •
a. cla	ım only	b. zooplankton only
c. cla	m and zooplankton	d. clam, zooplankton and sea urchin
(B) Stud	ly the following food chair	n, then complete the table below :
(=, = ===	•	·
	Aigae	——→ Sea star ——→ Shark
	The living organism	Its type
1.	Algae	4 mm m a d free d 4 4 4 4 4 4
2.	**********	Primary consumer.
3.	Sea star	* 6.2.2 \$ \$ 4 4 4 \$ 5 5 5 4 4
4.	Shark	consumer.

Form a food chain on land environment from the following living or	ganisms :
(Deer – Shark – Grasses – Lion)	
Self-Assessment 11 till Lesson 2	,,,,,,
(A) Cross out the odd word:	
 Primary consumers – Decomposers – Secondary consumers – Top predators. 	()
2. Fox - Clam - Rabbit - Eagle.	()
3. Seabird - Small fish - Tiger - Microorganisms.	()
(B) Give a reason for the following:	
Predators cannot feed directly on plants.	
2 (A) Correct the underlined words :	
1. Energy transfers when a secondary consumer feed on	
a producer,	()
2. All nonliving things can make their own food.	()
3. Producers need the energy of moonlight to make photosynthesis	
process.	()
(B) What happens to?	
The food resources of the seabirds when the seawater becomes c	ooler.
• 1 10011111111111111111111111111111111	*******************************

Study the following food web, then put (\checkmark) or (x) :	
> Sheep	
Grasses	
Grasses Lion ↑	
Deer —	
1. Energy can transfer from the producer to the deer only.	()
2. Both sheep and deer are primary consumers.	()
3. Grasses are considered as producers because they cannot make	, ,
their own food.	()
 The lion is considered as a secondary consumer and a top predator 	
	19

Gelf-Assessment 12 till Lesson 3

(A) Complete the following sentences using the words below:		
(producers – coral bleaching – plastic)		
1. In, the color of coral reefs turns completely into white.		
Marine living organisms cannot differentiate between real food and waste materials.	••	
3. In marine food chains, microorganisms are considered as		
(B) What happens to?		
The coral reefs when the seawater temperature rises.		
(A) Correct the underlined words :		
 Plastics are <u>healthy and smooth</u>, so they cause harm to marine living organisms. 		
2. Due to rising of seawater temperature, coral reefs turn completely into gree	n.	
3. Marine living organisms cannot differentiate between water and plastics.		
(B) Give a reason for the following:		
It is better to recycle plastic waste materials than throwing them in water.		
Choose from the following living organisms to form a food chain in seawar (Zooplankton – Shark – Algae – Tiger – Corals – parrotfish)	ter:	•
Self Assessment 13 till Lesson 4	********	••••
(A) Put (V) or (X):	,	
Removing plants at riverbanks, negatively impact the environment.	()
Habitat restoration projects, include repairing all natural resources of an ecosystem.	()
3. Riverbanks eroding may occur due to removing primary consumers away from an ecosystem.	()

(A) Choose from colu	ımn (B) what suits it in column (A) :
(A)	(B)
1. Corals	a. depend on grasses to get energy.
2. Seabirds	b. depend on deers to get energy.
3. Rabbits	c. depend on microorganisms indirectly to get energy.d. depend on algae indirectly to get energy.
(B) Give a reason for Removing plants a	at riverbanks harms an ecosystem in many different ways.
Correct the underline	ed words :
1. Microplastics is a n	ed words : new way that people in Egypt coastal communities apply to one-use plastic products.
Microplastics is a new decrease using of a second control of the second control of	new way that people in Egypt coastal communities apply to

Model Exam on Theme (1)



(A) Choose the c	orrect answer :		(5 marks
1. The roots of a	plant absorb	from the soil to help it g	
a. oxygen gas		b. carbon dioxide	
c. sugar		d. water	
2. The marine foo	od web usually starts	s with	
a. clam.	b. algae.		d. parrotfish.
3. A hawk can eat	t , when snake	es completely disappear	_
a. leaves		b. birds	,
c. grasses		d. grasshoppers	
photosynthesis	process?	are produced by the pla	ant during
a. Glucose and	oxygen.	b. Carbon dioxide	and water.
c. Glucose and	carbon dioxide.	d. Glucose and wa	ater.
	ortant for all living o		
(A) Write the scie	ntific term of each	of the following:	(5 marks)
1. A type of living	organisms that can	produce their own food	
by absorbing su	unlight.		(
2. It is found in pla	ant's leaves that give	es them green color and	d absorbs
energy from the	sunlight.		(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
A group of living	organisms that car	live on decaying dead	organisms.
			(**********************************
4. It is the number	of organisms of on	e type of species live in	an area. ()
(B) What happens	to?		
The food resour	rces of the small fisl	h when the seawater be	comes warm,

(A) Complete the following sentences:

(5 marks)

- 1. If producers increase in an ecosystem, the primary will increase.
- 2. Maple seeds and dandelion seeds can travel by
- 3. Predators living organisms may be for other living organisms.
- 4. The consumers that exist at the top of any food chain are called
- (B) Rearrange the following living organisms to form a food chain:

Small fish	Seabirds	Microorganisms

Assess Your Learning

Questions of the School Book on Theme (1)

d	Character than any					
4	Choose the correct	ct answer :				
	1. is the ma	in source of energy	for all living organis	ms.		
	a. Food	b. Water	c. The Sun	d. The mod	n	
	2 absorb th	e sunlight that the p	lant needs to make	food.		
	a. Roots	b. Leaves	c. Xylem vesse	els d. Stems		
	3. All of the following	ing are considered p	roducer organisms	, except		
	a. grass,	b. hawk.	c. algae.	d. trees.		
	4 can make	their own food.				
	a. Plants		b. Humans			
	c. Animals		d. Plants and s	ome animals		
	5return the	blood that contains	carbon dioxide bad	ck to the heart.		
	a. Lungs	b. Phloem vess	els c. Arteries	d. Veins		
	6. The increase of	pollution in an ecos	ystem will cause	in the numb	er of	
	species of living					
	a. increase	b. decrease	c. equality	d. no chanç	је	
7	Compare each of	the following :				
	1. What happens t	o the plant in the lig	ht and in the dark?			
	1)			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	4111111 1/14	
	2. Transport in pla	nt and human.				
		***************************************		44444122 ***** 4		
	The producer or	ganisms and the co	nsumer organisms.			
	**** *********** ***** * *****		,	,::::::::::::::::::::::::::::::		
,	Dut / <\ av /w\ .					_
י ר	Put (\(\nu\)) or (\(\lambda\) :					
		nergy is converted in			()
		s differ in plants and	humans and they o	lo not play		
	the same role.				()
		ms feed on each ot		gy-	()
	_4. An ecosystem c	onsists of living orga	ınısms only.		()

	5. A food web is a group of interconnected food chains that shows many foo	od	
	relationships.	()
	Human activities in the environment affect the living organisms only.	()
4	Rewrite the sentence after correcting the underlined word :		
	 Consumer organisms help decompose the remains of dead plants and a into nutrients that can be returned to the ecosystem. 	nima	S
	2. The increase of water temperature causes coral reefs turn into green.		
	3. Producer organisms need the moon light to perform photosynthesis.		
5	In front of you a group of organisms, observe them, then answer the folloquestions:	wing	J
	Add three other living organisms, then form a food web from all of them.		
		,,,,,,	
	2. Explain the type of each living organism in this food web.		
			••

Self-Assessments

on Concept (2.1)

Self-Assessment 14 On Lesson 1

(A) Correct the underlined words:		
1. Sand is an example of liquid matter. (**********)
2. Ice is water in the gas state. (***********)
3. Water vapor is considered as an example of solid matter. ()
(B) What happens to?		
The state of water when it is heated to a very high temperature.		
2 (A) Put (V) or (X):		
A mass of matter is the space occupied by this matter.	()
2. Any matter consists of tiny things that we cannot see with our eyes.	()
3. A matter has two states.	()
(B) Give a reason for the following:		
Oil is a matter.		
	1414444	
Classify the following words into solids liquids and gases in the table	halam.	_
Classify the following words into solids, liquids and gases in the table		
(Milk – Carbon dioxide – Sugar – Stone – Blood – Oxygen – Oil – Co Water vapor)	aı –	
Solids Liquids Gases		
Self-Assessment 15 till Lesson 2		
1 (A) Cross out the odd word :		
1. Air - Oxygen - Glass - Carbon dioxide. (this think the entries of a same)
2. Wood - Plastic - Glass - Air.		1
(.1

(B) Give a reason for the following :	
Gasoline is a liquid matter.	
······································	***************************************
(A) Correct the underlined words :	1000
1. Particles of solid matter have a lot of spaces.	(
2. Matter is anything that has color and volume.	(
3. We can measure the mass of some matter using thermometer.	(
(B) What happens to?	
The shape of ice if it changes into water.	
Arrange the following pictures that show the three states of water a	according to :
(A) (B) (C)	
1. Spaces between particles (Ascendingly).	

2. Energy of particles (Descendingly).	
2. Energy of particles (Descendingly).	
2. Energy of particles (Descendingly). Self-Assessment 16 till Lesson 3	
	······································
Self-Assessment 16 till Lesson 3	(
(A) Correct the underlined words: 1. A matter consists of tiny states.	,
(A) Correct the underlined words :	,
(A) Correct the underlined words: 1. A matter consists of tiny states. 2. To see some particles of a matter, we have to use a measuring tape.	. (

1. (Particles of of their contact	the following sentences: matter can slide over ea ainers matter can move very qui	
3. I	Both shape	and volume of a coin is	as it is a solid substance.
(B)	What happ	ens to?	
	. , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	olumns (B) & (C) what suit them i	
	(A)	(B)	(C)
	1. Glass	a. has no definite shape or volume.	A. Its particles have no energy.
	2. Water	b. has no definite volume and definite shape.	B. Its particles have low energy.
	3. Air	c. has no definite shape and definite volume.	C. Its particles have medium energy.
	3. Air	c. has no definite shape and	
1 (A)	1,	c. has no definite shape and definite volume. d. has definite shape and volume. 2	energy. D. Its particles have high energy. 3.
	1	c. has no definite shape and definite volume. d. has definite shape and volume. 2	energy. D. Its particles have high energy. 3

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may represent a model of a gas matter.

A golden ring is considered a matter.

(B) Give a reason for the following:

3. The mass of an iron cube is the amount of space that it takes up.

S_{Ω}	f_A	sse	cer	ma	nte
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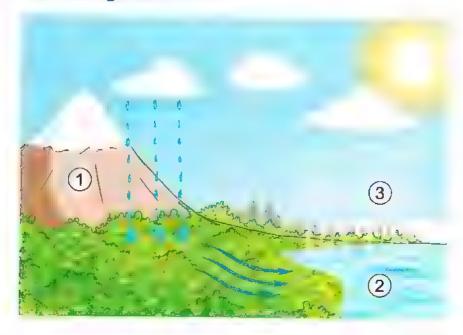
(A) Correct the underlined	words:	
1. Particles of liquids are a	rranged in a regular pattern.	(.)
2. Light is a form of matter.		(
3. A model is a copy that is	different from a real thing.	()
(B) What happens if?		
Water is placed in some	containers that have different s	shapes.
3 Classify the following mat	erials according to the arrange	ement of particles into
regular pattern or random	arrangement in the table belo	ow:
(wood – water –	plastic - oxygen - oil - carbo	on dioxide)
Regular pat	tern Random arr	angement

	,,,	
Gelf-Ass	essment 18 till Less	on 5
1 (A) Put (✓) or (X):		
1. A rock is a matter as it h	as mass and volume.	()
2. Models are designed to	let things be studied more hard.	. ()
3. Particles of a ruler are page	acked very close to each other.	()
(B) Give a reason for the fo	ollowing :	
Water vapor has no defin	nite shape or volume.	
(A) Correct the underlined	words:	
1. The amount of space oc	cupied by a substance is related	d to its <u>mass</u> .
		()
	esn't change whatever the conta	
are put in.		(
3. Particles of gases have	a regular pattern.	()

(B) What happens to ...?

The speed of particles of water when it is heated.

3 Look at the following picture that shows the water cycle in nature, then complete the following sentences:



- 1. Label (1) refers to a matter in state.
- 2. Label (2) refers to a matter in state.
- 3. Label (3) refers to a matter in state.

Model Exam on Concept (2.1)



1	(A) Complete the following sentences :	(5 n	arks)
	1. Matter is made up of tiny		
	2. Earth is a planet in the system.		
	3. To describe the particles of a matter in state by modeling balls, should put the balls packed together.	мe	
	4. Particles of matter can slide over each other.		
	(B) Give a reason for the following : Salt is a solid matter.		
7	(A) Chance the correct answer:		
Z	(A) Choose the correct answer: 1. All of these substances are liquids, except	(5 m	arks)
	a. oil. b. milk. c. stone. d. vinegar.		
	2. Gases have shape and volume.		
	a. definite – definite b. no definite – no definite		
	c. definite – no definite d. no definite – definite		
	3. The movement of particles of water are slower than that of		
	a. wood. b. plastic. c. air. d. gold.		
	4. We can use a model to study very large things such as		
	a. solar system. b. germs. c. microbes. d. viruses.		
	(B) What happens to?		
	The arrangement of particles of water after its freezing.		
3	(A) Put (V) or (X):	(5 m	arks)
	Gasoline takes the shape of its container.	()
	2. All matter have only one state.	()
	3. Particles of water can move more freely than the particles of water vapo	r. ()
	4. Particles of an aluminium spoon are similar to particles of a golden ring.	()
	(B) Cross out the odd word:		
	1. Coal – Carbon dioxide – Oxygen – Air. (•••••)
	2. Oil – Milk – Water – Wood.)

Self-Assessments

on Concept (2.2)

Salf Assessment 19 On Lesson 1

	COSTITION (13 C)	1 LC33011		
(A) Complete the following	g sentences using the w	vords below :		
(clim	ate – slanted – thermo	meter)		
 The roof of tropical rainf 	orest home is an	d made of leaves ar	nd sticks.	
The material that is used homes are different due	d in making roofs of dese to the difference in	ert homes and cold	weather	
3. When we have to know the	ne temperature of boiling	water, we can use th	ie	
(B) Give a reason for the f	ollowing:			
Rains can't enter homes		3.		

(A) Put (✓) or (X):				_
1. Balance can be used to	measure the length of y	our friend.	()
2. Strong stones protect the			ì)
3. We may need to measur	e more than one proper	ty to identify		,
an unknown matter.		•	()
(B) Mention the tool that is	s used in measuring the	following propertie	es:	
1. The mass of some orang	jes.	(.)
2. The volume of an amour	it of juice.	(***************************************)
B Look at the following pictor	re, then complete the f	ollowing sentences	:	
Home (1)	Home (2)	Home (3)		
Ceramic tiles are used in from	making the roof of hom	e () to prot	ect it	
2. Strong stones are used in and	n making the roof of hon	ne () to pro	tect it from	n
3. Leaves and sticks are us	ed in making the roof of	home () to	protect it	t
from				

Self-Assessment (20 till Lesson 2

(A) Choose the correct ar	iswer :	
1. You can differentiate be	etween flour and sugar throug	h their
a. color only.	b. taste only.	
c. color and odor.	d. taste and odor	
2. Which of the following I	nomes has a flat roof ?	# NO. 7 \$ \$ \$ 4
 Desert homes only. 		
 b. Cold weather homes 	only.	
c. Desert homes and to d. Desert homes and co	opical rainforest homes.	
	ometer to measure the	of objects
a. mass	b. length	or objects.
c. volume	d. temperature	
(B) Give a reason for the	· ·	
	between salt and sugar by y	our eves only
rod damor dinor dinate		our eyes only.
, , , , , , , , , , , , , , , , , , , ,		
2 (A) Correct the underline		
1. The mass of fruits is me	easured by using a measuring	<u>J cup.</u> (,)
2. Roofs of desert homes	are slanted to protect them from	om rains. ()
You can use the lens to	identify the taste of sugar cry	rstals. ()
	senses that you can use to c	lifferentiate between salt
and flour.		
M 11110-1		***************************************
***************************************		*** ***********************************
3 Look at the following figu	ures, then complete the follow	wing sentences :
.,		A 3
	53 23 4	A. C. C. C. C. C. C. C. C. C. C. C. C. C.
		OF THE PARTY OF TH
		7
Tool (A)	Tool (B)	Tool (C)
1. You can use tool	to measure the volume of	an amount of water.
2. You can use tool	to measure the mass of so	ome vegetables.
3. You can use tool	to measure the length of y	our pencil.

Self-Assessment 21 till Lesson 3

(A) Choose from column (B) what suits it in column (A):

(A)	(B)
1. Iron nail	a. sinks in water and doesn't attract to the magnet.
2. Piece of stone	b. floats on water and attracted to the magnet.c. sinks in water and attracted to the magnet.
3. Piece of wood	d. floats on water and doesn't attract to the magnet.

(B) Give a reason for the following:

When we cut a piece from an apple, the mass of the whole apple will change.

(A) Put (\(\sigma\)) or (\(\chi\)):

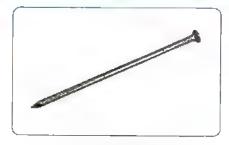
- The attraction of different materials to the magnet is from the chemical properties of matter.

 (
- The length of a wood bar can be measured by a ruler.
 ()
- 3. Ceramic tiles protect desert home roofs from dust and dirt.

(B) What happens if ...?

We put a piece of plastic close to a magnet.

Look at the following pictures, then choose the correct answer:



An iron nail material (A)



A wooden cube material (B)

1. If we put the two previous materials in water, which material sinks?

(material (A) - material (B))

- 2. If a magnet is put close to the two materials, which material doesn't attract to the magnet? (material (A) material (B))
- We can measure the mass of each material by using a ...

(ruler – balance)

Self-Assessment 22 till Lesson 4

(A) Choose the correct a	nswer:	
1. The used materials in I	making cooking pans are	+444**********************************
a. copper and glass.	b. copper and h	nelium.
c. glass and helium.	d. copper and v	wood.
2is sinking in	water and attracted to the n	nagnet.
a. A stone	b. An iron nail	
c. A wood spoon	d. A plastic rule	r
3. 1 kilogram of iron = 1 k materials are equal in .	ilogram of cotton. This sente	ence means that both
a. mass only.	b. volume only.	
c. volume and mass.	d. mass and ter	mperature.
(B) Give a reason for the Glass is used in making		······································
(A) Cross out the odd wo	rd :	
1. Shape – Mass – Rustin		()
2. Kilogram – Liter – Cubi	c centimeter – Milliliter.	()
3. Piece of wood - Iron na	ail – Piece of cork – Piece of	stone. ()
(B) What happens if?		
You put a piece of cork	in a beaker filled with water.	
Look at the following pic	tures, then complete the fo	llowing sentences :
Object (A)	Object (B)	Object (C)
1. Object () is ma	ade of steel, because it is	and
	ade of rubber, because it is	
3. Object () is ma	ade of glass, because it is	and

Model Exam on Concepts (2.1) & (2.2)



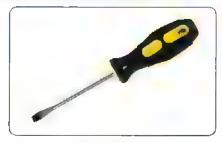
4	(A) Complete the	following ser	ntences using the wo	rds below :	(5 ma	rks)
	(rubber – incr	eases – microscope	e – mass)		
	1. When an ice cu		d to the Sun, the spee	ed of movement of	its	
	2. The of	your school b	ag can be determined	l by a balance.		
	3. A model of a ge		o see its shape witho	ut using a	which is	
	4. As is a	waterproof m	aterial, we can use it	in making gloves.		
	(B) Give a reason	for the follow	ring :			
	Rusting of iron	is considered	from the chemical pro	operties of matter.		
2	(A) Put (✓) or (X)	*	······		(5 ma	rkel
			ater. it will float.		(Jina)
	 If we put a wooden cube in water, it will float. Color of milk is considered as one of its chemical properties. 			()	
			y are very large partic		()
			t from particles of pla		()
	(B) What happens	to?				
	The shape of w	ater when it cl	nanges into ice.			
			***************************************		111 /1	
3	(A) Choose the co	rrect answer :			(5 ma	rks)
	1. When water bed	comes ice, this	s means that it chang	es from	. state to	
	state) <u>.</u>				
	a. solid – liquid		b. solid – gas			
	c. liquid – solid		d. liquid – gas			
	2. Oil takes the	of its	container.			
	a. volume	b. shape	c. color	d. mass		

- 3. If we cut a tomato into two halves, so the of one half of the tomato will decrease to the half.
 - a. color
- b. mass
- c. temperature
- d. shape
- 4. All the following can be used to describe matter, except
 - a. shape.
- b. color.
- c. price.
- d. texture.

(B) Look at the following pictures, then complete the following sentences:



Object (A)



Object (B)

- 1. Object (.....) is made of steel, because it is hard and strong.
- 2. Object (.....) is made of glass, because it is transparent and smooth.

Self-Assessments

on Concept (2.3)

Self-Assessment 23 On Lesson 1

(A) Complete the following sentences using the words below:	
(heated – mass – melting)	
 If we mix an amount of oil with an amount of vinegar, the them will not change. 	. of both of
2. Ice is turned into water by process.	
3. When a matter is, its particles speed will increase.	
(B) Give a reason for the following:	
Thermal energy is very important in our daily life.	

(A) Correct the underlined words :	
1. When the temperature of ice increases, it melts and turns into s	
	()
Melting process changes the matter from solid state to liquid sta by cooling.	
3. When a matter is heated, its particles move slower.	()
(B) What happens if?	()
You leave some cubes of ice in a warm room.	
TO THE COLLEGE OF THE WATER TOOMS.	
B Look at the following pictures, then choose the correct answer:	
(A) (B) (C)	
1. The solid state of water is picture	(A - B - C)
2. The liquid state of water is picture	(A ~ B - C)
3. The gas state of water is picture	(A ~ B - C)
4. In which picture the particles of matter are close together?	(A - B - C)

Self-Assessment 24 till Lesson 2

(A) Complete the following sentences using the words below:

(thermal - heating - condensation)

- 1. Melting and evaporation take place by
- 2. When ice gain . energy, its temperature increases and changes into water.
- 3. We can change water vapor into water by using process.

(B) Give a reason for the following:

When the temperature of liquid water decreases, it freezes.

(A) Correct the underlined words:

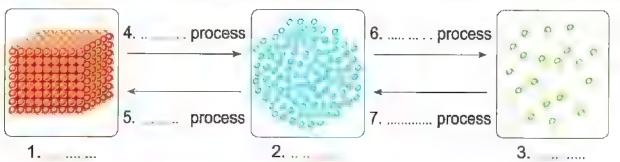
- 2. Melting process cause the particles of matter to move close to each other.
- 3. Evaporation changes water into ice.

(B) What happens to ...?

The distance between particles of water vapor when it touchs a cold surface.

3 Use the following words to complete the following diagram:

(Evaporation - Water - Melting - Water vapor - Condensation - Ice - Freezing)



Self-Assessment 25 till Lesson 3

(A) Complete the following sentences using the words below:

(mass – temperature – filtration – properties)

- 1. When ice melts and changed into water, its will increase.
- 2. We can separate sand from sand and water mixture by using process.
- 3. In salty water, the and of salt and water don't change after mixing.

(B) Give a reason for the following:

Sweet taste of sugar doesn't change after mixing an amount of sugar with water.

(A) Correct the underlined words:

- 1. During evaporation process, the particles of matter move slower and spread far from each other.
- 2. Changing of matter from liquid state to gas state needs cooling. (......)
- 3. Mixing salt and pepper form a compound which has the same properties of its components.

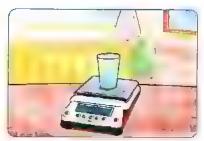
(B) What happens to ...?

The mass of some apple pieces if we mix them with some pieces of banana.

On dissolving the salt in figure(A), we made salty water mixture in figure(B). Choose the correct answer:



Salt-figure (A)



Salty water-figure (B)

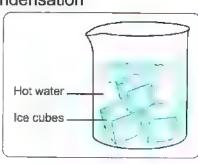
- 1. The mass of salt in figure (B) equals gm. (20-30-50)
- 2. The mass of water in figure (B) equals gm. (20-30-50)
- 3. If we increase the mass of salt in figure (A) to 30 gm and mix it with the same amount of water, so the mass of salt in the new mixture will be gm. (20-30-50)
- 4. The taste of salt in figure (B) will

(remain as it is - disappear - change into another taste)

Self-Assessment 26 till Lesson 4

(A) Choose the correct answer:

- 1. Both of processes need increasing in temperature.
 - a. evaporation and freezing
- b. melting and freezing
- c. melting and evaporation
- d. freezing and condensation
- 2. Which of the following changes take place in this activity?
 - a. The hot water changes from gas to solid.
 - b. The hot water changes from liquid to solid.
 - c. The ice cubes change from solid to liquid.
 - d. The ice cubes change from solid to gas.



3. Cutting a paper into smalla. shape only.c. shape and color.	pieces causes a change in itsb. size only. d. shape and size.
(B) Give a reason for the following a paper is consider	lowing: lered as a physical change.
2 (A) Correct the underlined w	vords :
1. Boiling of water changes it	
 Mixing baking soda with vinew chemical properties. Producing ash from burning a physical change. 	inegar forms a mixture which has () ing of wood is considered as (
(B) What happens if?	
Water vapor Beaker 1 contains salty water	, then answer the questions : Cold glass sheet Water drops Beaker 2
, ,, , ,	ikes place on the cold glass sheet ?
	that occurs in the two beakers ? 1 after a long period of time ?

Self-Assessment 27 till Lesson 5

	Commercial in		mi Fe92011)
1	(A) Choose the correct answer:			
	1. All the following can pass throug	h filters duri	ng desalination	of water,

- except
- a. salts. b. minerals. c. seaweed. d. gases.
- 2. On decreasing the temperature of water vapor, it
 - a. freezes. b. condenses. c. melts. d. evaporates.
- 3. The change produced as a result of coloring a paper is the same change produced from
 - a. rusting of iron. b. mixing baking soda with vinegar.
 - c. mixing iodine with starch. d. melting of wax.

(B) Give a reason for the following:

The water of seas and oceans is considered as a mixture.

(A) Put (\(\sigma\)) or (\(\chi\)):

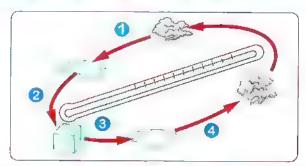
- After desalination process, the water that is returned back to oceans is useful to marine life.
- Dehydration means that human body loses water.
 ()
- 3. The change of water into water vapor is a physical change.

 ()

(B) What happens to ...?

Movement of ice particles, when it is exposed to Sun rays for a short period of time.

Look at the following figure, then answer the questions below:



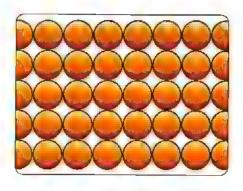
- Number indicates condensation process, while number indicates evaporation process.
- 2. Number indicates melting process, while number ... indicates freezing process.
- 3. Mention the type of change happening in this figure?

Model Exam on Theme (2)



1 (A)	Choose the co	rrect answer:			(5 marks)
1.	Steel is used in	making hamme	rs, because it	is	
i	a. flexible.	b. smooth.	c. transpa	rent. d. hard.	
	We can use filtration process to remove all the following from sea water, except				
	a. seaweed.	b. salt.	c. shells.	d. fish.	
3.1	Both	and a	are solids as the	y have definite sha	pe and volume.
	a. wood - oxygen		b. milk – iron		
(c. wood – iron		d. milk – oxygen		
4.	To separate san	d only from salt	y water, we ca	n use	process.
á	a. filtration	b. evaporation	c. melting	d. freezin	g
(B)	Give a reason t				
	Sometimes we r			scone	
			ACCHOIT MICIO	зсоро.	
·					
2 (A)	Complete the f	following sente	nces using the	words below:	(5 marks)
		ceramic tiles -	_		,,
	You can describ exture".	e the texture of	sugar crystals	by saying "it has	. crystal
2. E	Boiling of water	to form water va	por is conside	ered as a	change.
			-	mall in case of its .	~
				uild their home ro	
	hem from rain.	71			
(B)	What happens i	if?			
A	A piece of ice is	exposed to Sun	rays for a per	fod of time.	
		*****************	***************************************	**************	***************************************
3 (A)	Choose from co	olumn (B) what	suits it in colu	ımn (A) :	(5 marks)
	(A)			(B)	
	1. Milk	a. its	particles are p	packed tightly.	
	2. Air	b. its	part icles have	e medium energy.	
	3. Wood	c. its	c. its particles move very freely.		
	J. 77000	d. its	particles don't	move at all.	
	4		<u> </u>		
	T	2		3	

- (B) Look at the opposite ball model that shows the particles of a matter, then complete the following sentences:
 - 1. This model represents a matter in state.
 - 2. If we want to make changes in this model to show this matter in a liquid state, we should the distance between balls.

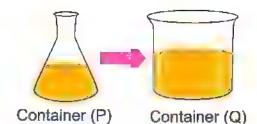


Assess Your Learning

Questions of the School Stock on Thems (2)

Choose the correct answer:

- 1. Which of the following are compressible (Water vapor, Oxygen, Nitrogen)?
 - a. Water vapor and oxygen only.
- b. Oxygen and nitrogen only.
- c. Water vapor and nitrogen only.
- d. All water vapor, oxygen and nitrogen.
- 2. When the liquid is transferred from the container "P" to "Q" as shown in the opposite figure, which of the following undergoes change?
 - a. Volume.
- b. Mass.
- c. Shape.
- d. Temperature.

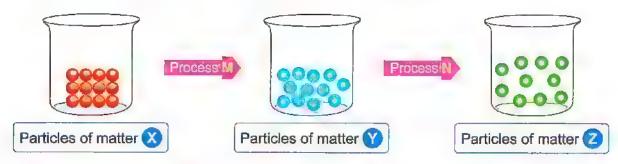


- 3. Ice cubes melt when they gain energy.
 - a. electrical
- b. light
- c. sound
- d. thermal
- 4. is the process by which water changes into ice.
 - a. Melting

b. Freezing

c. Evaporation

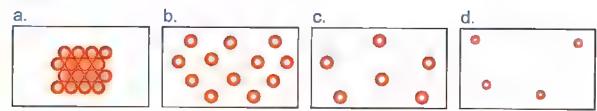
- d. Condensation
- 5. Select the false statement from the following:
 - a. Matter exists in three states.
 - b. Matter is changeable from one state to another.
 - c. A new substance is formed by a chemical reaction.
 - d. Ice is heavier than water.
- 6. Study the following figure, then choose the correct answer:



- a. 🐼 is a solid state 🔁 is a gaseous state 🚻 is melting process.
- b. 🐼 is a solid state 🕜 is a liquid state 🕦 is freezing process.
- c. W is a liquid state 2 is a solid state N is evaporation process.
- d. **(∀)** is a liquid state **(⊘)** is a gaseous state **(M)** is condensation process.

PART 1

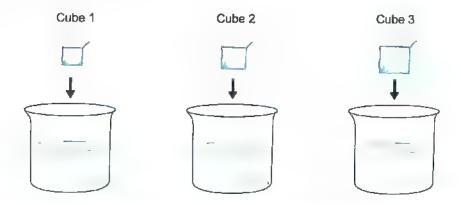
7. From the following figures, in which one of them the particles have greatest amount of energy?.............



Sea water

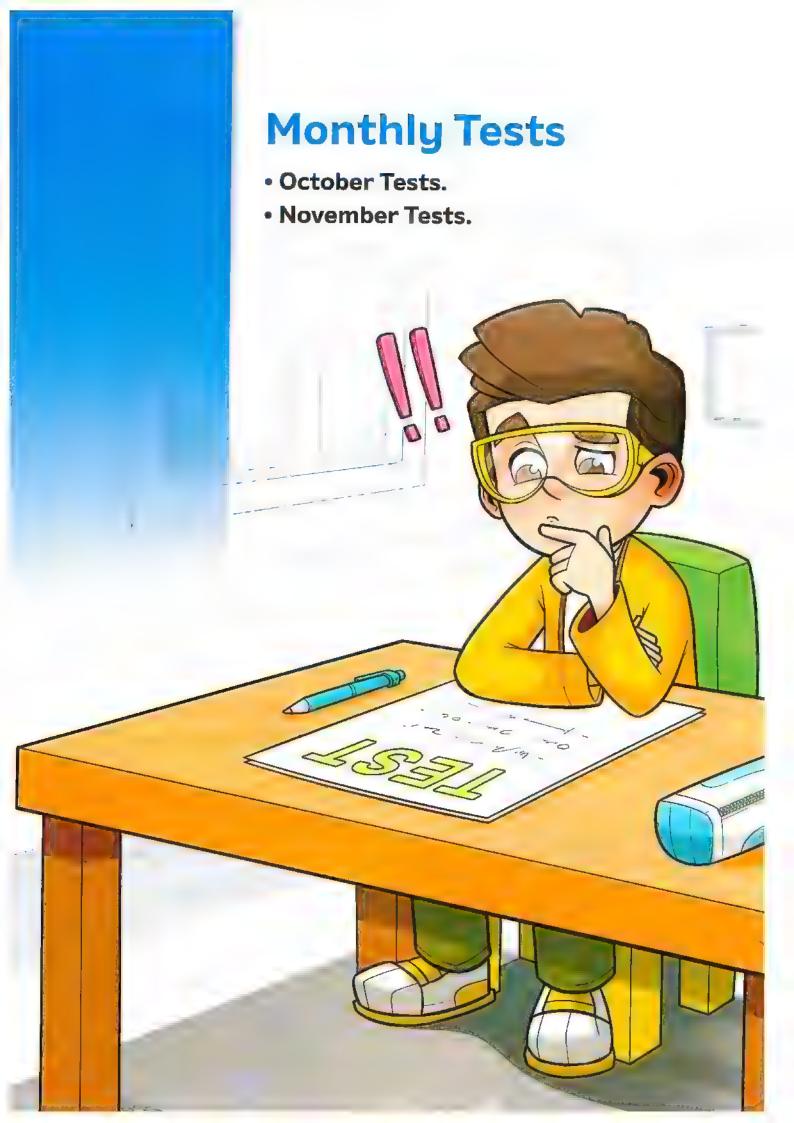
Sand

- 8. If you have a filter paper, a glass sheet, and a flame, what is the correct order of operations to be carried out for the sample in front of you to obtain drinkable water?
 - a. Evaporation → Filtration → Condensation.
 - b. Evaporation → Condensation → Filtration.
 - c. Filtration \rightarrow Evaporation \rightarrow Condensation.
 - d. Filtration → Condensation → Evaporation.
- 9. Which of the following is an evidence that a chemical change has occurred?
 - a. Smoke billowing (smoke rising).
 - b. Cracking nuts.
 - c. Squeezing a balloon filled with air.
 - d. Melting of a piece of wax.
- 10. A student has three ice cubes of different sizes, and three identical containers contain the same amount of water. The student puts each ice cube in each container as shown in the drawing.



What happens to ice cubes when they are placed in water?

- a. Cubes 1, 2, 3 sink.
- b. Cubes 1, 2, 3 float.
- c. Cube 1 floats, while cubes 3 and 2 sink.
- d. Cubes 1 and 2 float, while cube 3 sinks.



October Tests



Model 1

1	(A) Put (✓) or (X):	(5 marks)
	 The green plants can make their own food through flowers. 	()
	Phloem transports glucose to all parts of plant.	()
	3. Air enters plants through roots.	()
	4. Tuber stems grow and extend above the soil.	()
	(B) Give a reason for the following:	
	Frog is a secondary consumer.	
2	(A) Choose the correct answer :	(5 marks)
	1. Lion is from	
	a. producers. b. grass eaters. c. meat eaters. d. decomposers.	
	2. Plant takes from the air to make its own food.	
	a. water b. oxygen gas	
	c. carbon dioxide gas d. sugar	
	3. Photosynthesis process takes place inside	
	a. roots. b. leaves. c. stem. d. flowers.	
	4 from nonliving things in ecosystem. a. Soil b. Fungi c. Bacteria d. Birds	
	3	
	(B) Form a food chain by using the following organisms:	
	(Frog – Grass – Grasshopper – Snake – Owl)	
3	(A) Write the scientific term of each of the following:	(5 marks)
	 They are organisms that feed on the dead organisms bodies and break them down into smaller pieces. 	~,~~,
	They are pores on the surface of the plant's, leaves that allow gases move in and out of the plant. ()
	3. A gas that is used in photosynthesis process. ()
	4. A part of plant that carries water from roots to leaves. ()
	(B) Cross out the odd word:	
	Grasses - Rats - Hawks - Snakes. ()





	(A) Chance the covered and		
	(A) Choose the correct ans		(5 marks)
	What substance used in	photosynthesis does the plant get throu	igh its stomata?
	a. Carbon dioxide gas.	b. Sugar.	
	c. Oxygen gas.	d. Water.	
	2. Which of the following is the soil move through the	the correct order in which the water ab	sorbed from
	a. Leaves Stem	→ Root.	
	b. Root Stem	Leaves.	
	c. Stem Root	Leaves.	
	d. Stem Leaves	Root.	
	3 are considered p	orimary consumers.	
	a. Grasses	b. Flowers	
	c. Insects	d. Lions	
	4. Grapes haveste	em.	
	a. tuber	b. runner	
	c. wood	d. climb	
	(B) Form a food chain by us	sing the following organisms:	
	(Deco	mposer – Lion – Deer – Grass)	
	······································		
2	(A) According to the follow	ring food chain, put (🗸) or (X) :	(5 marks)
		Grass Rabbit Snake	
	1. Rabbit is a producer.		()
	2. Grass is a predator.		()
	3. Snake is a producer.		()
	4. Rabbit is a prey.		()
	(B) What happens if?		
	Some seeds receive air,	water and suitable temperature.	



(A) Choose from columns (B) and (C) what suit them in column (A):

(5 marks)

(A) Seeds		(B) Characteristics	(C) Type of seed dispersal	
1. Coconut seeds	0	A. they have spines	a. by wind.	
2. Burdock seeds	-	B. they are light seeds	b. by animals' stool.	
3. Dandelion seeds		C. they float on water	c. by water.	
4. Tomato seeds		D. they can be eaten by animals	d. stick to animals fur.	

1	2	2	X
A special part of the second s		3 - x4944009434	4

(B) Give a reason for the following:

Filloeth is very important for the plant.	

The state of the s

November Tests





1	(A) Complete the following sentences :	(5 marks		
	We can protect coral reefs from by transferring some sn corals into	nall pieces of		
	2. The state of an ice cube is, while the state of the air we is	e breathe		
	3. Seabirds feed on the which feed on that float or the sea.	the surface of		
	4. Particles of liquid matter can move more faster than particles of and more slower than particles of matter.	matter		
	(B) Give a reason for the following:			
	Liquids take the shape of their containers.			
2	(A) Put (V) or (X):	(5 marks)		
	Matter consists of tiny moving particles.	()		
	2. Energy remains in an ecosystem and transferred between its component. (
	3. Microorganisms can make their own food.	()		
	4. Natural gas used in gas oven has definite shape and volume.	()		
	(B) Cross out the odd word:			
	Water - Air - Wood - Light.	()		
3	(A) Write the scientific term of each of the following :	(5 marks)		
	1. An area in the ocean where scientists take care of small pieces of	of coral reefs		
	until they grow up.	(,)		
	2. Turning of color of coral reefs completely into white.	()		
	3. The tool used to measure the length of a wall.	()		
	4. Anything that has mass and volume.	()		
	(B) What happens to?	•		
	Grasses disappear from an ecosystem.			

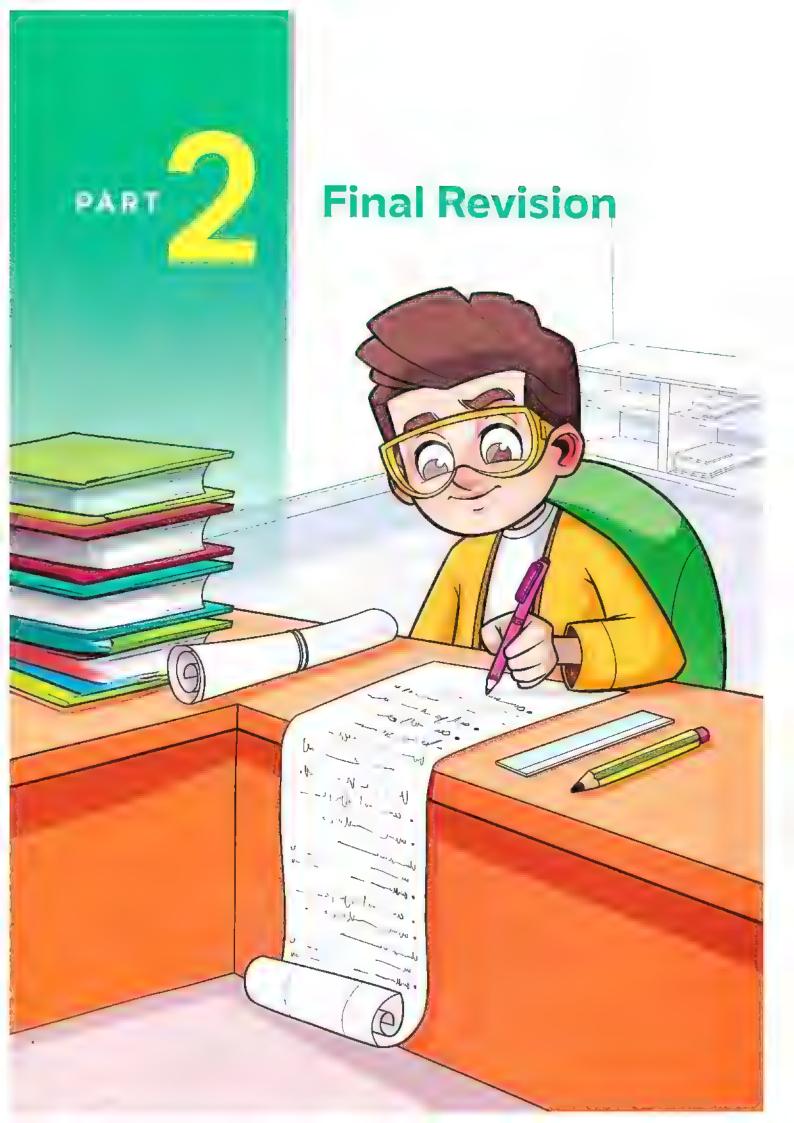




4	(A) Character compatence			
1	(A) Choose the correct answer:	16 6 - 4		(5 marks)
	1. The coral bleaching means that,			
	a. red. b. white.	c. green.	d. black.	
	2. The particles are packed tightly w			
	a. water. b. oxygen.	c. wood.	d. vinegar.	
	3. When corals the seawate	er, they may ingest r	d. warm	
	a. evaporate b. filter			
	 The amount of space that a matter a, volume. b. mass. 	c. weight.		
		c. weight.	d. length.	
	(B) What happens to?	blass Hossa		
	The size of a balloon when you	blow it up.		

2	(A) Write the scientific term of each	h of the following:		(5 marks)
	1. A process of returning a habitat b	ack to its natural sta	ate before	
	harm was done.		()
	2. It is the harm that happens to the	water due to huma	n activities. ()
	3. A copy that is similar to a real thing	which we cannot obs	erve	
	it with our eyes.			
	4. A device used to examine objects	s that are too small t	o be seen	
	with the naked eye.		(or near navel numbers
	(B) Give a reason for the following			
	Death of algae may lead to mov	ing sharks away to a	another places.	

3	(A) Complete the following senten	res :		(5 marks)
	1. We can classify the types of matt		and	(D Mai no)
	2. Sea cannot differentiate	-		
	in the water.			
	Water vapor particles are loosely definite or	packed, so that wat	er vapor don't h	ave
	4. When the number of primary con-	sumers decreases,	the amount of p	roducers
	will and the number of te	rtiary consumers wil	l	
	(B) Look at the opposite figure the	-		19
		ii diisvei .	<i>*</i> i	tawk
	1. This is considered a			9
	2. Snake can feed on		MZ =	
	and frog.		Frog	nake
			<u>'</u> ~	Rabbit
			Grasshopper	buse
			1,81	4.32



THEME	7
THEME	3

Systems

	UNIT ONE	Interactions o	f Organisms
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Review on Concept 1.1	No. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	55	- 60
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THEME 2 Matter and Energy

UNIT TWO: Particles in Motion

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Review on Concept 2.3		76 - 80





Review on Concept (1.1)

Scientific terms (Delimitons):

Scientific terms	Definitions
1. Photosynthesis process :	It is the process through which the green parts of plants (leaves) absorb sunlight to make their own food.
2. Stomata :	They are pores on the surface of plant's leaves that allow gases to move into and out of the plant.
3. Flowers :	They are the reproductive parts of many plants.
4. Plant reproduction :	It is the process of making new plants.

Z Importance or uses:

Items	Importance or uses	
1. The plant roots :	- They fix the plant in the soil.	
The plant roots .	- They absorb water and nutrients from the soil to the plant.	
2. The plant stem :	 It transports water and nutrients from the roots to the rest of the plant through xylem. 	
	- It supports leaves and flowers of the plant.	
3. Xylem vessels :	They transport water and nutrients from the plant roots up to its leaves through the stem.	
4. The plant leaves :	They make food for the plant through photosynthesis process.	
5. Chlorophyll :	- It gives the leaves their green color.	
o. Omorophyn .	- It absorbs energy from the sunlight.	
6. Human circulatory system :	It transports oxygen and nutrients through the blood to all the body parts.	
7. Heart :	It pumps the blood to all the body parts and receives it again.	
8. Arteries :	They carry blood rich in oxygen and nutrients (glucose) from the heart to all the body cells.	
9. Veins :	They carry blood rich in carbon dioxide from all the body parts to the heart.	
10. Plant transport system :	It transports water, nutrients and plant food between the plant parts.	
11. Phloem vessels :	They transport glucose sugar from the leaves to all other parts of the plant.	
12. Flowers :	They produce seeds that help the plant to reproduce.	



3 Chill Leason for 1

1. Roots have important role in photosynthesis process of plants.

Because they help the plant to absorb water and nutrients from the soil.

2. Photosynthesis process is important for plants to survive.

Because it helps the plant to make its own food.

3. Green plants can make their own food.

Because they can make photosynthesis process.

4. The presence of hairlike structures in plant's roots.

To increase the amount of absorbed water and nutrients that the plant needs.

5. Xylem vessels are important for the plant.

Because they transport water and nutrients from roots to the plant's leaves.

6. The presence of stomata on the surface of plant's leaves.

To allow gases to move into and out of the plant.

7. Chlorophyll in plant's leaves has an important role in photosynthesis process.

Because chlorophyll absorbs the energy from sunlight that helps the plant to make photosynthesis process.

8. There is no life on Earth in the absence of plants.

Because plants produce oxygen gas during photosynthesis process which is important for all living organisms to breathe.

9. Xylem in plant is a one-way vessel.

Because xylem carries water and nutrients from the roots to the leaves.

10. Flowers are important parts for the plant.

Because flowers produce seeds for the plant that help it to reproduce.

11. Seeds dispersal may take place by animal in two different ways.

Because seeds can stick on animals fur or being eaten by animals and come out with their stool.

12. Seeds of maple or dandelion plants can disperse through wind easily.

Because they are light seeds.

13. Burdock seeds can stick to animal fur.

Because their seeds are spiny seeds.

Mhat happens if _____

Plants have no stems.

Water and nutrients will not be carried from the roots to the leaves.

2. Plants can't get carbon dioxide gas from air.

Plants can't make their own food during photosynthesis process.

3. We put a green plant in a dark room for many days.

Plant's leaves will be yellow and can't make photosynthesis process.

4. We put a seed of bean in wet soil for many days.

It will germinate and grow well.

5. We put a bean seed in a wet paper towel for more than two months.

It will germinate and make sprouts for a while, then it will die.

6. A plant is placed in a dark place for many days.

The plant can't make photosynthesis process and it will die.

7. The plant doesn't have roots.

The plant can't absorb water and nutrients from the soil and also can't be fixed in the soil.

B. Stomata of a plant get closed for a long time.

Gases can't move into or out of the plant's leaves and the plant will die.

9. Plant's leaves don't contain chlorophyll.

The plant can't absorb the energy from sunlight and can't make photosynthesis process.

10. The plant stop making photosynthesis process for several days.

It can't make its own food and it will die.

11. Plants can't produce glucose sugar during photosynthesis process

Plants can't get their needed energy to survive and grow.

12. We remove the flowers of a plant.

The plant can't produce seeds that help it to reproduce.



Plant transport system and human circulatory system.

Plant transport system

Human circulatory system

[Similarities]

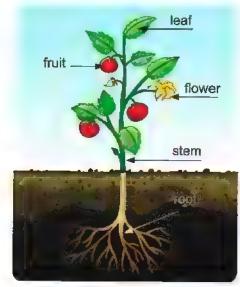
- Both have vessels to transport water, nutrients and gases.
- Both have one-way vessels.

Differences 1

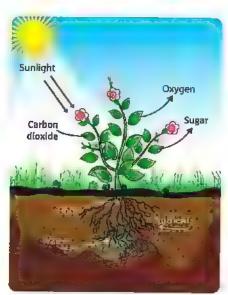
- The transport system in plant is a system of tubes called xylem and phloem that transport different materials around the plant parts.
- Xylem tubes carry water and nutrients from the roots to the leaves.
- Phloem tubes carry sugars from the leaves to all the plant parts.

- The transport system in human is the circulatory system that moves blood around the human body.
- Arteries carry blood rich in oxygen and nutrients from the heart to all the body parts.
- Veins carry blood that contains carbon dioxide and a very small amount of nutrients and oxygen from all body parts back to the heart.

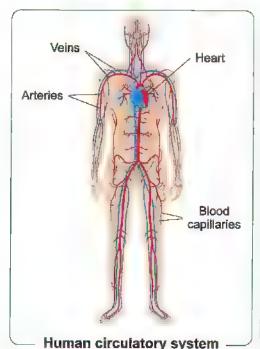
6 important drawings:

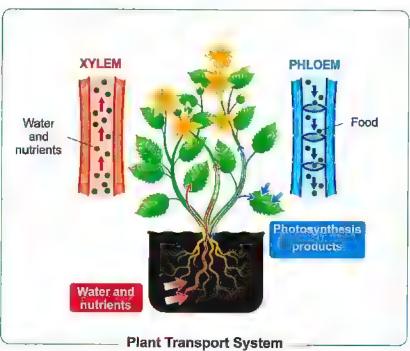


Plant parts



Photosynthesis process





7 Main prints

- · Plants need water, air, sunlight, nutrients and space to grow.
- In the presence of water, seeds can grow (germinate) without soil.
- In the presence of water and sunlight, plants can grow without soil for a while but finally they need soil.
- Plants make their own food through photosynthesis process.
- Sunlight is important to plant growth, because plants use sunlight to make their own food, so the plant without sunlight does not grow well because it had less food.
- How can plants make their own food through photosynthesis process?
 - Green plants use their leaves to collect sunlight and carbon dioxide from the air.
 - Plant roots absorb water from the soil.
 - Inside the green plants, sunlight allows carbon dioxide to combine with water to produce :
 - * Oxygen which is released in the air to help living organisms breathe.
 - * Sugar (the food of plant) which gives the plant the energy it needs to grow.
- During photosynthesis process, light energy of the Sun is transformed into chemical energy that is found in glucose.
- Plants roots have hairlike features (structures) called root hairs that increase the amount of absorbed water and nutrients that the plant needs from the soil.
- How does photosynthesis process occur in plant leaves?
 - Chlorophyll absorbs energy from sunlight.
 - Green leaves use the light energy from the Sun to combine the carbon dioxide from the air with water.

- Leaves manufacture (produce):
 - * Nutrients (such as sugars, starches, fats and proteins) that the plant needs to survive.
 - * Oxygen gas that animals and people need to breathe.
- As the photosynthesis process is completed inside the leaves, there are tubes called **phloem** that transport the food materials from the leaves to the other parts of the plant.

Forms of stems:

- Some plants have wood stems, such as tree trunks and shrubs.
- Most flowers have upright stems.
- Some plants have climb stems, such as vines (grapes).
- Some stems extend underground and they are called tubers, such as potato plant.
- Some stems run along the ground and they are called runners.

· There are many kinds of leaves such as :

- Narrow leaves that look like needles, such as pine trees.
- Flat, wide leaves.
- The human circulatory system consists of the heart, blood vessels and blood.
- The human circulatory system has three different types of blood vessels which are arteries, veins and blood capillaries.
- · Blood is the fluid that moves in only one direction in the human's arteries or veins.
- The plant transport system consists of xylem and phloem.
- The transport system in plants has one-way vessels that move important substances between the parts of the plant.
- When seeds receive air, water and suitable temperature, they can grow into a new plant.
- Seeds are transported from one place to another, this process is called seed dispersal.

· Ways of seed dispersal in nature :

Ways of seed dispersal	Examples
Floating on water	Coconut seeds
Traveling by wind	Maple seeds – Dandelion seeds (both of them are light seeds)
Sticking to animal fur	Burdock seeds (have spines)
Being eaten by animals	Tomato seeds – Apple seeds

Review on Concept (1.2)

TScientific terms (Definitions)

Scientific terms	Definitions	
1. Ecosystem :	It is an area (or community) that contains living organisms and nonliving things that interact with each other.	
2. Producers :	They are organisms that can make their own food and don't feed on other plants or animals.	
3. Consumers :	They are organisms that eat other living organisms to get their energy, because they cannot make their own food.	
4. Decomposers :	They are organisms that carry out the process of decomposition by breaking down or decaying dead organisms.	
5. Food chain :	It is a model that shows how energy passes from one organism to another in an ecosystem.	
6. Food web :	It is a model that shows several interconnected food chains among living organisms.	

Give reasons for:

1. Animals eat different types of food.

To get energy as they cannot produce their own food.

2. Human needs to eat some animals and plants.

To get his needed energy to do his activities.

3. Sunlight is important for all living organisms.

Because it is absorbed by the plants leaves to make their own food and grow, then humans and animals eat these plants.

4. Consumers depend on producers to get their energy.

Because consumers cannot make their own food.

5. Soil fertility depends on decomposers.

Because decomposers return nutrients of dead organisms back to the soil.

6. Sticky seeds of some plants can stick to human clothes or an animal's body.

To disperse their seeds to other places.

3 What happens ...?

 If a hawk is placed in an ecosystem that doesn't contain any living organisms except plants.

The hawk moves away to search for food in another ecosystem.

2. If there is no sunlight reaches the Earth's surface.

The plants cannot make their own food by photosynthesis process, so there will be no life on Earth.

3. If all primary consumers disappear from a certain food chain.

The secondary consumers will move away to another place to search for food or they will die.

4. If all types of decomposers are absent from an ecosystem.

Dead organisms will not be decomposed and their nutrients will not return back to the soil.

Main points:

- The interaction between different components of an ecosystem depends on the flow of energy through these components.
- Energy flows (moves) through an ecosystem from plants to animals and also between animals when they eat each other.
- When living organisms die, they decompose and their nutrients (energy) is returned to the soil.
- Hawks do not eat plants, but they eat animals who eat plants, so they also depend on plants for energy.
- An ecosystem is a community that provides food, water and shelter to all living organisms live in it.
- There are many different ecosystems on the Earth such as an ocean, a rainforest, a desert or the tundra.
- We need energy to do all activities in our daily life such as thinking, breathing and moving.
- There are some activities require a lot of energy such as hard work or doing exercises.
- The Sun is the primary source of energy for all organisms on Earth to live, grow and carry out life processes.

- Plants can make their own food through photosynthesis process by absorbing the sunlight through their leaves and use the sun's energy to convert water and carbon dioxide gas into glucose sugar.
- Animals including humans cannot make their own food, but they get energy from the environment in which they live.
- Living organisms can be classified into three main groups according to their way of feeding which are:
 - 1. Producers.
- 2. Consumers.

- 3. Decomposers.
- There are three types of consumers which are :
 - **Primary consumers**: they are animals that eat plants and they are also known as herbivores, such as many insects.
 - Secondary consumers : they are animals that eat the primary consumers, such as birds.
 - **Tertiary consumers**: they are animals that eat the secondary consumers, such as alligators.
- Worms and millipedes are considered as decomposers that eat dead organisms and produce waste which is rich in nutrients that increase the soil fertility for plant growth.
- Any animal that is hunted and eaten by another animal is called "prey".
- Any consumer that hunts and eats another animal is called "predator".
- A food web shows interactions among many food chains so, the food web contains many organisms, while a food chain shows interactions between just few organisms.
- Restoration ecology means "rebuilding habitats that are damaged".
- Different plants need different ways to disperse their seeds, where:
 - There are plants with **sticky seeds** that stick to human clothes or an animal's body, so human or animal can carry these seeds to another place where seeds fall down.
 - Other plants have **light seeds** that are dispersed by wind, these seeds are carried away by winds to new habitats to grow in other places.

Review on Concept (1.3)

🌈 Scientific terms (Definitions) :

Scientific terms	Definitions	
1. Population :	It is the number of organisms of one type of species living in an area.	
2. Habitat restoration :	It is the process of returning a habitat back to its natural state before harm was done.	

2 Give reasons for :

1. When the number of one species of consumers in an ecosystem increases, they will die.

Because they will not find enough food to eat.

Death of algae may lead to moving sharks away to another places.Because sharks feed on different fish that depend on algae to get their food.

3. Change in the population of one species affects the population of other species.

Because in the ecosystem, all species depend on other species to survive, so an increase or decrease in one species affects the population of other species.

4. Coral bleaching happens when the water temperature rises.

Because when the water temperature rises the coral reefs get rid of algae from their tissues and turn completely into white causing coral bleaching.

5. Plastics are very harmful to marine organisms.

Because plastics are toxic and sharp.

When we remove plants from riverbanks, the floods become more dangerous.

Due to eroding of riverbanks.

3 What happens ...?

 If people throw big amounts of plastic garbage and waste materials in water.

They will pollute water and the marine organisms will be negatively affected.

2. If a small lake is exposed to extreme hot climate for several months.

The water of the lake decreases due to its evaporation and may completely disappear.

- 3. If the number of secondary consumers in an ecosystem decreases
 The number of primary consumers increases, while the amount of producers and the number of tertiary consumers decrease.
- 4. If the climate change is unsuitable for a population of one type of species. The population of this species will decrease.
- 5. If the seawater becomes warm.

The microorganisms will move away to a cooler water and also fish that feed on microorganisms.

4 Main points

- Relationship between all the components of an ecosystem play an important role in keeping this ecosystem balanced.
- · When an ecosystem changes, food webs in this ecosystem change too.
- **Top predators** are consumers that exist at the top of food chains, such as tigers, lions, sharks, crocodiles, ... etc.
- Although energy is transferred between living organisms, most of the energy is recycled by decomposers back into the ecosystem.
- Any increase or decrease in the number of organisms of one type of species living in an area is known as "population change".
- Seabirds feed on small fish which feed on microorganisms that float on the surface of the sea.
- Microorganisms can make their own food and they are found in cold water habitats.
- The climate change affects the population of a species, where :
 - When the climate is suitable, the population of a species increases.
 - When the climate change is **unsuitable**, the population of a species **decreases** because the organisms would either die or move to another place.
- Some human activities can change the habitats in an ecosystem such as :
 - Building up more buildings and roads.
 - Throwing waste materials in water.
 - Overfishing in seas and oceans.
- Human activities can also impact the weather and nonliving factors in an ecosystem, such as the temperature of ocean water.



- The changes in the habitats can cause habitat loss which is one of the main causes of extinction.
- Healthy habitats are important to all organisms in a food web, because they
 provide organisms with resources that they need to survive as air, food, water
 and shelter.
- When habitats are destroyed, different organisms may not be able to survive and this will negatively affect the flow of energy in the food web.
- Coral reefs are some of the most diverse and valuable ecosystems on Earth.
- Coral reefs provide food and shelter for large numbers of fish, corals and other marine organisms and also they are important for tourism.
- · Coral bleaching happens when the water temperature rises.
- Sea turtles cannot differentiate between a jellyfish and a piece of plastic in the water.
- Plastic products get broken down into smaller pieces called microplastics.
- When corals filter the seawater to get their food, they ingest microplastics that are as small as the pieces of food that corals get from the water, so corals get harmed.
- People can decrease their use of plastic products or recycle them instead of throwing them in the sea.
- Nursery is an area in the sea or ocean, where scientists take care of small pieces of coral until they grow up and can be moved back to the reefs where they were dying.
- In Egypt, coastal communities near the coral reefs use a new way of life known as "zero plastics", where people in these communities decrease using of one-use plastic products.

Cavi av on Concept (2.1)

5 Scientific terms (Definitions):

Scientific terms	Definitions	
1. Matter :	It is anything that has a mass and takes up space.	
2. Model :	It is a copy that is similar to a real.	

2 Importance or uses .

Items	Importance or uses		
Measuring tap (tape measure) :	It is used to measure the length of some matter.		
2. Scale (balance) :	It is used to measure the mass of some matter.		
3. Thermometer :	It is used to measure the temperature of some matter.		
4. Normal microscope :	It helps us see some particles of matter.		
5. Electron microscope :	It helps us see one tiny particle such as (one blood cell).		
6. Globe :	It helps us see the shape of Earth, how much of Earth is covered with water and where different countries are located.		
7. Model of solar system :	It helps us see all planets at once and compare betwee planets which one is the biggest and which one is the closest to Earth.		
8. Model of a germ :	It helps us see the shape of a germ without microscope and see different parts of a germ that help it spread from one person to another.		
9. Model of volcano ;	It helps us see the shape of volcano and how the liquid that comes out of a volcano during a real eruption.		
10. Model of airplane :	It shows us how airplane filies up into the air.		
11. Model :	It helps us: - Teach something about the real things it copies - See and understand how things work. - Learn about many things at just the right size. - Know what we could not otherwise see.		

3 Ewo leadonn for

1. Salt is a matter.

Because it has mass and volume.

2. Sugar is a solid matter.

Because it has definite shape and volume.

3. Wood has definite shape and volume.

Because it is a solid matter.

4. Oxygen has no definite shape or volume.

Because it is a gas matter.

5. Particles of a piece of iron are very close to each other.

Because it is a solid matter.

Water has different shapes when it is placed in some containers that have different shapes.

Because it has no definite shape and takes the shape of its container.

7. Using models to study some scientific concepts.

To study them in an easier way.

8. Sometimes we need to use on electron microscope.

Te see each tiny particle as it is more powerful than normal microscope.

Particles of gases can spread out quickly to fill up any container they are put in.

Because they are not held together.

10. Liquids take the shape of their containers.

Because their particles can slide over each other.

11. Scientists make model of germs.

To see the shape and parts of germs without microscope.

12. Oil used in cooking is considered as an example of liquid matter.

Because it has no definite shape and definite volume.

4 What happens ...?

1. To the state of water after it is heated in the kettle for few minutes.

It changes from liquid state into gas state.

2. To the shape of water if we put three equal amounts of water in three different containers.

It will take the shape of each container.

- 3. To the volume of a coin if we move it from a cup to another cup. It will not change.
- To the shape of water if it changes into ice.It will have definite shape.
- 5. To the speed of particles of an ice cube when it is exposed to the Sun. It will increase.
- To the size of a balloon when you blow it up. It will increase.
- 7. To the speed of particles of liquid when it changes into gas. It will increase.
- 8. To the arrangement of particles of water after its freezing. It will be organized.
- 9. To the state of milk if we put small amount of it in the freezer for few hours. It changes from liquid state to solid state.

5 Потраневи

Solids	Liquids	Gases
Particles :	Particles:	Particles :
 They are very close to each other (packed tightly). 	They have more spaces.	They have a lot of spaces.
 They have less energy. They move only a little bit. They cannot move separately from one place into another. They cannot slide over each other. They have a regular pattern (organized). 	 They have more energy. They can move more freely. They move faster than solid particles. They can slide over each other. They have a random arrangement (not well organized). 	They have a lot of energy. They move very freely. They have a random arrangement (not organized at all).

Shape and volume:

- They have definite shape and volume.
- Their shape doesn't change unless something is happening to change them.

Shape and volume:

- They don't have definite shape but they have definite volume.
- They take the shape of their containers.



Shape and volume:

- They don't have definite shape and volume.
- They completely fill their containers and take their shapes.



Examples:

Ice, wood, iron, ... etc.

Examples:

Water, oil, gasoline, etc.

Examples:

Water vapor, oxygen, carbon dioxide, ... etc.



Water can be found in the three states of matter, where :

Solid state : ice cubes.Liquid state : water.

- Gas state : water vapor (steam).

· Water can be changed from one state into another.

All matter are made up of tiny particles that we cannot see with our eyes.

Matter can change from one state to another state such as :

Solid state Freezing Liquid state

- There are something that are not matter such as light and sound which are forms of energy.
- If there are two objects, they cannot take up the same space at the same time.
- Particles are the building unit of matter.

When a cup of ice cubes placed on a table exposed to the Sun in a hot summer day :

- The Sun will heat up the particles of ice cubes.
- Then, the particles of ice cubes will move faster and turn into water.
- And the Sun heats up the particles of water so, they move faster and the water will evaporate.

Chefs use different states of matter to change ingredients such as :

- Bolling some water to cook pasta or rice, where water (liquid state) changes into steam (gas state).
- Freezing vegetables keep them fresh and ready to use for longer periods of time.
- Leave a cup of juice of milk in freezer to change from liquid state into solid state.

Review on Concept (2.2)

Scientific ferms (Unfinitions)

Scientific terms	Definitions	
1. Physical properties :	They are properties which can be observed with your five senses	
2. Chemical properties :	They are properties which can be observed and measured by the changes that happen in this material when it interacts with other materials.	
3. Volume :	It is the amount of space that matter takes up.	
4. Mass :	It is a measure of the amount of matter.	
5. Temperature :	It is a measure of how quickly the particles in a matter are moving.	
6. Conduction :	The ability of materials to transfer heat and conduct electricity.	

2 Importance or uses:

Items	Importance or uses	
1. Measuring cup :	It is used to measure the volume of objects.	
2. Tape measure :	It is used to measure the length of objects.	
3. Ruler :	It is used to measure the length of objects.	
4. Balance (common balance) :	It is used to measure the mass of objects.	
5. Thermometer :	It is used to measure the temperature of objects.	
6. Helium :	- It is used to fill balloons It is used to fill blimps.	
7. Copper:	- It is used in making electrical wires It is used in making cooking pans.	
8. Steel :	It is used in making screwdrivers and hammers.	
9. Glass :	It is used in making windows, light bulbs and eyeglasses.	
10. Rubber :	It is used in making tires, gloves and athletic shoes.	



3

1. The roof of desert home is made of strong stones.

To protect the desert home from dust and dirt.

2. The roof of tropical rainforest home is made of leaves and sticks.

To protect the tropical rainforest home from animals getting inside.

3. You can use the sense of sight only to differentiate between salt and pepper.

Because both of salt and pepper have different colors.

4. Rusting of iron is considered from chemical properties of matter.

Because rusting of iron is a change that happens to iron when it interacts with air and water.

5. When the particles of a matter move quickly, its temperature increases.

Because quickly moving particles produce more thermal energy which cause increasing in temperature.

6. Helium is used to fill balloons and blimps.

Because helium is lighter than air.

Human can use helium gas safely.

Because helium is not flammable or poisonous.

8. Wood and plastic are used in making handles of cooking pans.

Because wood and plastic are bad conductors of heat.

What happens ...?

1. If the roofs of cold weather homes is flat.

The rain will be collected on the top of cold weather homes.

2. To a piece of paper if it interacts with fire.

The paper becomes ash.

3. To the temperature of a matter if the speed of its particles decreases.

The temperature of the matter will decrease.

4. To an iron nail and a plastic spoon if they are put close to a magnet.

The iron nail will attract to the magnet, while the plastic spoon will not attract to the magnet.

5. To a piece of cork if it is put in water.

The piece of cork will float on the surface of water.

6. If a blimp is filled with helium gas.

The blimp will rise up in the air.

7. If electrical wire is made from wood instead of copper.

It will not conduct electricity.

5 Comparisons

1. Desert home, cold weather home and tropical rainforest home:

Points of comparison	Desert home	Cold weather home	Tropical rainforest home
1. Material of the roof :	Strong stones.	Ceramic tiles (ceramic bricks).	Leaves and sticks.
2. Properties of roof material :	It is flat.It protects the home from dust and dirt.	- It is slanted (inclined). - It protects the home from rains.	It is slanted (inclined).It protects the home from animals getting inside.

2. Volume and mass:

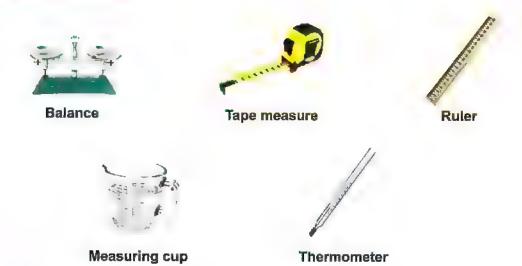
Volume	Mass
It is the amount of space that matter takes up.	It is a measure of the amount of matter.
The measuring units of volume are: - Liters (L) Mililiters (mL) Cubic centimeters (cm ³).	The measuring units of mass are: - Gram (g) Kilogram (Kg).
$1L = 1000 \text{ mL} = 1000 \text{ cm}^3$	1 Kg = 1000 g
Example : A big bottle of water contains 1 liters or more.	Example : A paperclip has a mass about 1 gram.

3. Physical and chemical properties of helium :

Physical properties of helium	Chemical properties of helium
It is a light gas which means it is lighter than air.	 It is not poisonous. It is not flammable (A flammable material means that this material burns and form fire).



hapartant drawing



7 Main points :

- The kind of material used to make a roof depends on the climate where the home is located.
- Color, texture, odor and shape are some of the physical properties of matter.
- Volume, mass and temperature are physical properties of matter that you can measure.
- You may need to measure more than one property of material to determine if this
 material is the right one you can use in a certain purpose or not.
- You can use words such as rough, blue, round and sweet to describe the physical properties.

Examples of chemical properties of some materials:

- The ability to burn such as when a paper interacts with fire, the paper becomes ash.
- The ability to rust such as when an iron nail interacts with water and air, the iron nail rusts.
- One liter of water has a mass of 1 kilogram.
- · Quickly moving particles produces more heat energy than slower moving particles.
- Floating and sinking of a substance doesn't depend on its mass.

- Some substances are attracted to the magnet such as iron nail and some other substances are not attracted to the magnet such as stone, wood and cork.
- Changing the shape of material doesn't affect its mass, but changing the size of material can affect the mass of it.

Physical properties of copper:

- It can be shaped into thin, flexible wires.
- It conducts electricity well (good conductor of electricity).
- It conducts heat well (good conductor of heat).
- Wood and plastic are bad conductors of heat so, they can be used in making handles of cooking pans.

Properties of some types of matter :

1. Type of matter :	Steel	Glass	Rubber
2. Properties of it :	- Hard.	- Transparent.	- Waterproof.
	- Strong.	- Smooth.	- Flexible.

Review on Concept (2.3)

3 Scientific terms (Deliaitions):

Scientific terms	Definitions
1. Melting process :	It is a process in which a matter is changed from solid state to liquid state when its temperature increases (by heating).
2. Freezing process :	It is a process in which a matter is changed from liquid state to solid state when its temperature decreases (by cooling).
3. Evaporation process :	It is a process in which a matter is changed from liquid state to gas state when its temperature increases (by heating).
4. Condensation process :	It is a process in which a matter is changed from gas state to liquid state when its temperature decreases (by cooling).
5. Mixture :	It is the substance that consists of more than one matter which don't have any chemical change in their properties.
6. Compound :	It is a matter that is formed when two or more materials combine chemically to form new substance.
7. Physical change :	It is a change in matter without any change in its structure.
8. Chemical change :	It is a change in matter with a change in its structure producing a new matter (substance).
9. Desalination :	It is the process of removing salt from water.

2 Importance or uses:

Items	Importance or uses	
1. Thermal energy :	It is used every day in many things such as cooking food and warming homes.	
2. Filtration :	It can be used to separate a mixture if one material in the mixture is a solid that does not dissolve in a liquid.	
It can be used to separate a solid material that dissolve in a liquid, where the liquid evaporates by heating.		

3 Give reasons for:

- Ice is turned into water when it is placed in a warm room.
 Because the temperature of ice increases, so it will melt and becomes liquid.
- 2. When particles of water absorb thermal energy, the water becomes warmer. Because the particles of water move faster, vibrate and spin around faster.

3. When the temperature of ice cubes increases, they will melt.

Because ice cubes will gain thermal energy, so it changes to liquid water.

4. Both melting and freezing processes are considered as physical changes.

Because in these processes the matter changes without any change in its structure.

5. Formation of water drops when water vapor touches a cold surface.

Because water vapor loses thermal energy to the cold surface, so the particles of water vapor move slower and get close together forming water drops.

6. Fruit salad and salty water are considered as mixtures.

Because they are formed of two or more materials.

7. Filtration process is used to separate soil from water.

Because the soil does not dissolve in water.

8. By adding baking soda to vinegar the properties of each of them are changed.

Because mixing baking soda with vinegar produces gas causing bubbles which means that the properties of the substances are changed.

9. Making bread is considered as a chemical change.

Because the taste of bread is not like its ingredients which means that a new substance is formed.

10. Formation of a layer with reddish color on the surface of a wet iron wire after a period of time.

Because when iron reacts with oxygen and water, it rusts (forming a chemical substance called iron oxide).

11. Formation of a bad odor when milk is left out of the fridge for several days.

Due to the chemical change that happens to the milk.

12. Making fruit salad is considered as a physical change.

Because mixing fruit salad doesn't form a new substance.

13. We cannot drink the water of oceans and seas.

Because it is a mixture of water, salt, other minerals, gases, living organisms and dead organisms.

What happeas ... to

1. To some ice cubes if we increase their temperature.

Ice cubes will melt and become liquid water.

2. To the motion of water particles if we heat an amount of water.

The particles of water will move faster.

3. To the particles of water when its temperature is decreased below 0°C.

The particles of water release thermal energy and they move slower and get close together forming solid ice.

4. To the particles of water when we increase its temperature above 100°C.

The particles of water gain more thermal energy and they move faster and spread more forming water vapor.

5. To salty water when heating it for a long time.

The water will evaporate leaving the salt in the container.

6. To the mass and properties of sugar when adding it to an amount of flour.

The mass and properties of sugar will not change.

7. If we mix jodine with cornstarch.

A new substance is formed and its color is dark blue.

8. If oxygen, carbon and hydrogen are combining together.

They release heat that can start a fire.

9. If you expose a shiny piece of metal to air (oxygen) for a long period of time.

The piece of metal will lose it's shining.

10. If you boil an amount of seawater for a long time.

Water vapor rises up leaving salts and other minerals.

5 Котранізово

1. Melting and freezing processes :

Melting	Freezing	
In this process, the particles of a solid matter gain energy.	 In this process, the particles of liquid matter release energy. 	
This causes particles to move around more and their temperature increase.	This causes particles to move slower and their temperature decrease.	
So, the matter changes to liquid state.	So, matter changes to solid state.	

2. Mixture and compound:

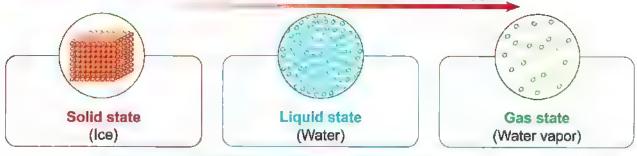
Mixture	Compound	
 A mixture is a matter formed of two or more materials. 	A compound is a matter formed of two or more materials.	
 The materials that form a mixture don't combine chemically and mixing them does not change them into new substances. 	The materials that form a compound combine chemically to form a completely new substance.	

3. Physical changes and chemical changes:

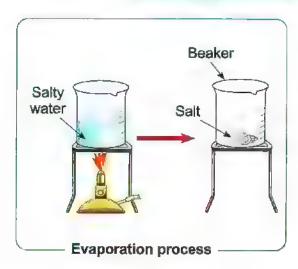
Points of comparison	Physical changes	Chemical changes
1. Definition :	It is a change in matter without any change in its structure.	It is a change in matter with a change in its structure producing a new matter (substance).
2. Reversibility :	They are usually reversible.	They are not reversible easily.
3. Examples :	 Cutting a paper into small pieces. Making salad. Melting wax. 	 When mixing iodine with cornstarch, a dark blue new substance is formed. When mixing baking soda with vinegar, gas bubbles appear. Leaving a cup of milk out of the fridge for about two days can produce a bad smell.

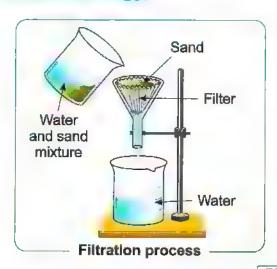
filmportant drawings :

Heating (particles of water gain energy)



Cooling (particles of water release energy)





7 Main points:

- Thermal energy is not a physical thing (material) but it is an energy in the form of heat.
- The thermal energy from the Sun keeps living things on the Earth alive.
- When particles of a matter absorb more thermal energy, they move, vibrate and spin around faster that causes this matter becomes warmer.
- When particles are cooled down, particles move slower and come close together.
- Light energy is like thermal energy when particles of a matter absorb them, particles move, vibrate and spin faster.
- 0°C is known as the freezing point of water.
- Water is found in liquid state between 0°C and 100°C.
- (°C) is the measuring unit of temperature.

· Mixtures can be made of :

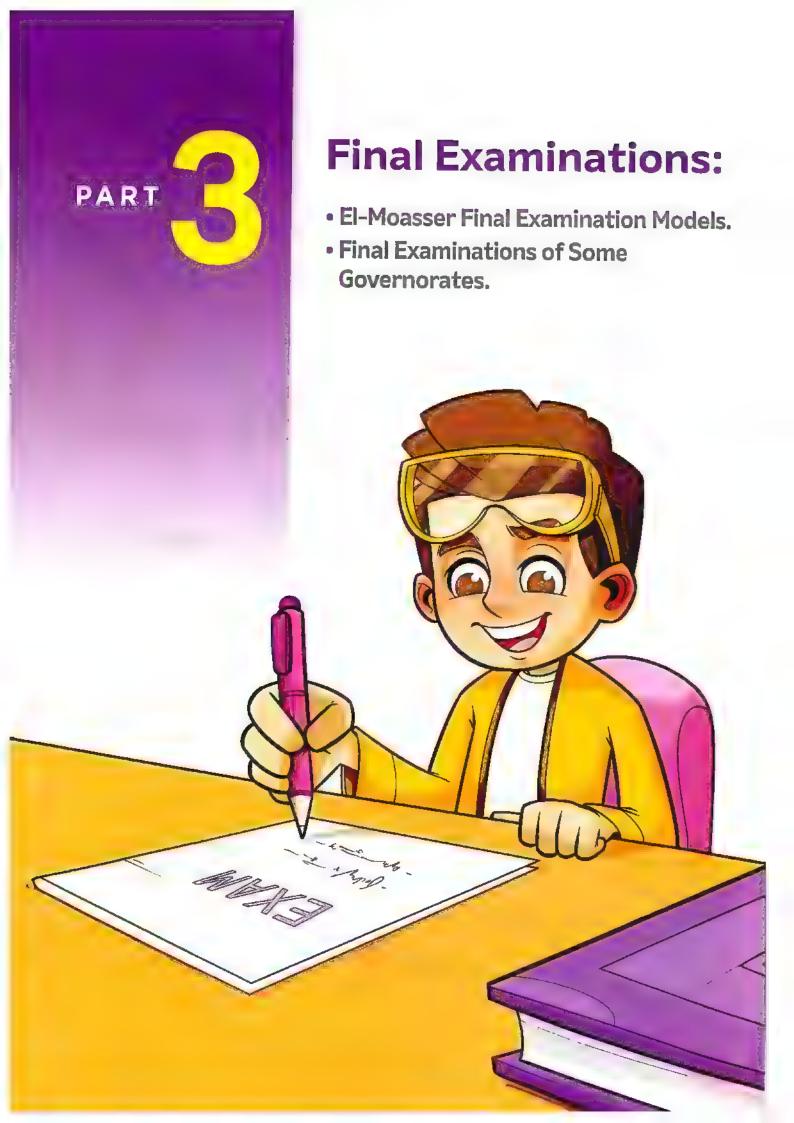
- Solid materials as : Sand and rocks.
- Solid and liquid materials as : Salty water.
- Gas materials as : Air.

· Properties of mixture :

- It consists of two or more materials
- All materials that form a mixture don't combine chemically.
- Each material in a mixture keeps its properties that you can use to identify it such as sugar does not lose its sweetness when it is dissolved in water.
- The components of a mixture can be separated after mixing them by different methods such as filtration and evaporation.
- Among evidences that describes physical changes are: change in size, change in shape, expected change in color, change in state of matter.
- Among evidences that describes chemical changes are: unexpected color change, formation of gas bubbles, formation of strong odor.
- Filtration of sea water removes any large materials such as seaweed, shells and fish only, but water, salts, minerals and gases would pass through filters that makes water still undrinkable.

· Problems of desalination :

- It requires a lot of energy.
- It is very expensive process.
- It may lead to environmental problems such as :
 - Small marine organisms can be hurt due to sucking of water into the desalination plants.
- The water that contains a very big amount of salt that is pumped back to oceans after desalination can be dangerous to the marine life.



El-Moasser Final Examination Models

1	(A) Choose the correct answer:		
	1. Plants take from the a	air to make its own food.	
	a. water	b. oxygen gas	
	c. carbon dioxide gas	d. sugar	
	2. A community that includes living	ng organisms and nonliving things is known	
	as		
	a. digestive system.	b. respiratory system.	
	c. ecosystem.	d. vascular system.	
	3. When the marine habitats are food webs is	destroyed, the number of living organisms in	their
	a. increased. b. decrease	ed. c. not changed. d. doubled.	
	4. Some liquids come out from a	during its eruption.	
	a. star b. wooden	piece c. volcano d. plastic piece	
	(B) Give a reason for the followi	ing :	
	The roof of desert home is made	ide of strong stones.	
		,	
2	(A) Put (✓) or (X):		
	We can describe a solid matter	er by its color and shape.	()
		I will change when mixing it with vinegar.	íí
	3. Particles of all matter are in a		í
	4. Xylem helps the plant to get wa	vater from the soil.	· ·
	(B) What happens if?		,
	A plant is placed in a dark plac	ce for many days.	
	·		
3	(A) Complete the following sent		
		waste materials into a river causes water	
	2. Both organisms and	organisms cannot produce their own f	ood.
	3. Without in the leaves of	of plants, gases can't move in or out of the pl	ant.
	4. Melting of wax is a cha	ange, while burning of wood is a cha	nge.
	(B) Cross out the odd word:		
	1. Oil – Milk – Water – Wood.	(
	2. Roots - Stems - Leaves - Sur	nlight. ()

(A) Complete the fo	_		
1. When we heat ar	n ice cream, it	and becomes liqu	uid.
2. Digestion of food	is considered as a	change of n	natter.
3. We can use	in making hamn	ners because it is	and strong.
	to measure the		while you can use
B) What happens t	o?		
The speed of par	ticles of an ice cube	when it is exposed	to the Sun.
1			
A) Write the scient	ific term of each of	the following:	
l. It is the number of	organisms of one type	pe of species living in	an area. (
2. The animal that is	s eaten by another a	nimal.	(
3. The liquid substan	ce that plants, anima	ls and human need to	survive. (
l. A part of the plan	t that anchors it in th	ie soil.	(
B) Give a reason fo	or the following: eat some animals a	nd plants.	·
B) Give a reason for Human needs to	or the following: eat some animals a	nd plants.	
B) Give a reason for Human needs to	or the following : eat some animals a	nd plants.	
B) Give a reason for Human needs to A) Choose from co	eat some animals a	nd plants. it in column (A):	
B) Give a reason for Human needs to A) Choose from co	eat some animals a lumn (B) what suits	it in column (A):	tate to liquid state.
A) Choose from co (A) 1. Condensation 2. Melting 3. Freezing	eat some animals a lumn (B) what suits a. is the change of c. is the change of	it in column (A): (B) f water from solid states water from gas states water from gas states	tate to liquid state e to solid state. e to liquid state.
A) Choose from co (A) 1. Condensation 2. Melting	eat some animals a lumn (B) what suits a. is the change of c. is the change of d. is the change of	it in column (A): (B) If water from solid states water from gas states water from liquid states.	tate to liquid state e to solid state. e to liquid state. ate to gas state.
A) Choose from co (A) 1. Condensation 2. Melting 3. Freezing	eat some animals a lumn (B) what suits a. is the change of c. is the change of d. is the change of	it in column (A): (B) f water from solid states water from gas states water from gas states	tate to liquid state e to solid state. e to liquid state. ate to gas state.
A) Choose from co (A) 1. Condensation 2. Melting 3. Freezing	eat some animals a lumn (B) what suits a. is the change of c. is the change of d. is the change of	it in column (A): (B) If water from solid states water from gas states water from liquid states.	tate to liquid state e to solid state. e to liquid state. ate to gas state.
A) Choose from co (A) 1. Condensation 2. Melting 3. Freezing 4. Evaporation	eat some animals and animals and animals and animals and animals and animals and animals and animals and animals and animals and animals animals and animals a	it in column (A): (B) f water from solid state water from gas state water from liquid state water from liquid state water from liquid state	tate to liquid state e to solid state. e to liquid state. ate to gas state.
A) Choose from co (A) 1. Condensation 2. Melting 3. Freezing 4. Evaporation 1. B) Correct the under	eat some animals and animals and animals and animals and animals and animals and animals and animals and animals and animals and animals animals and animals a	it in column (A): (B) If water from solid states water from gas states water from liquid states water from liquid states water from liquid states and states water from liquid states and states water from liquid states and states and states and states and states are states and states and states are states and states and states are states and states are states and states are states and states are states and states are states	tate to liquid state e to solid state. e to liquid state. ate to gas state. ate to solid state.
A) Choose from co (A) 1. Condensation 2. Melting 3. Freezing 4. Evaporation 1. B) Correct the under	a. is the change of c. is the change of d. is the change of e.	it in column (A): (B) If water from solid states water from gas states water from liquid states water from liquid states water from liquid states and states water from liquid states and states water from liquid states and states and states and states and states are states and states and states are states and states and states are states and states are states and states are states and states are states and states are states	tate to liquid state e to solid state. e to liquid state. ate to gas state. ate to solid state.

	(A) Put (✓) or (X):		
	1. Air enters plants through roots.	()
	2. All plants need the same way to disperse their seeds.	()
	3. If coral reefs are destroyed, many marine food chains will be destroyed.	()
	4. Vinegar and frozen vegetables have definite shape.	()
	(B) What happens if?		
	A magnet is put close to an iron nail and a plastic spoon.		
2	(A) Complete the following sentences using these words :		
	(overfishing – shelter – toxic – predator)		
	Healthy natural resources include clean air, healthy food, water and suitable		
	2. The human activity that directly decreases the marine population is known as	n	
	When a sea turtle eats a jellyfish, this means that the sea turtle is a living organism.		
	3. When a sea turtle eats a jellyfish, this means that the sea turtle is a		
	3. When a sea turtle eats a jellyfish, this means that the sea turtle is a		
	3. When a sea turtle eats a jellyfish, this means that the sea turtle is aliving organism.4. Plastic waste materials are very harmful to marine organisms, because the are	ey)
	3. When a sea turtle eats a jellyfish, this means that the sea turtle is a	ey)
3	 When a sea turtle eats a jellyfish, this means that the sea turtle is aliving organism. Plastic waste materials are very harmful to marine organisms, because the are	ey)
3	 When a sea turtle eats a jellyfish, this means that the sea turtle is aliving organism. Plastic waste materials are very harmful to marine organisms, because the are	ey)
3	 When a sea turtle eats a jellyfish, this means that the sea turtle is aliving organism. Plastic waste materials are very harmful to marine organisms, because the are	ey)
3	 When a sea turtle eats a jellyfish, this means that the sea turtle is aliving organism. Plastic waste materials are very harmful to marine organisms, because the are	ey)
3	 When a sea turtle eats a jellyfish, this means that the sea turtle is aliving organism. Plastic waste materials are very harmful to marine organisms, because the are)
3	 When a sea turtle eats a jellyfish, this means that the sea turtle is a)
3	 When a sea turtle eats a jellyfish, this means that the sea turtle is a		.)

	(A) Write the scientific term of each of	the following:	
	1. The process of producing new plants.	. (.	***********
	2. A group of living organisms that can p	produce their own food. (.)
	3. Flying living organisms that build their		· ·
	mountain cliffs and dive deeply into th	•)
	4. The state of matter that has definite v	·	
	(B) Give a reason for the following:	,	•
	Balloons and blimps filled with helium	always rise up in the air.	
	,,		
	100 0 1100		
2	(A) Put (V) or (X):		
	 Healthy habitats provide living organis food and water. 	sms with clean air, nearthy	1
		ermal aparau, thay may a slower	()
	 When particles of a matter absorb the Recycling nutrients back to the ecosy. 		∌r. (<i>)</i>
	of the consumers.	stem is the main function	/)
	From the chemical properties of helium	m is that it is not flammable	()
	(B) What happens if?		()
	Plants have no stems.		
	Tiding have no stome.		
			11 11 1
2	(A) Choose the correct answer:		
3	(A) choose the correct unswer .		
3	When the plant seed begins to grow a	and makes sprouts, this proce	SS
3	• •	and makes sprouts, this proce	ss
3	1. When the plant seed begins to grow a		
3	When the plant seed begins to grow a is called	c. absorption. d. reprod	
3	When the plant seed begins to grow a is called a. respiration. b. germination.	c. absorption. d. reprod	
3	 When the plant seed begins to grow a is called a. respiration. b. germination. Decomposers always the soil 	c. absorption. d. reprod c. benefit d. harm	
3	 When the plant seed begins to grow a is called a. respiration. b. germination. Decomposers always the soil a. pollute b. damage 	c. absorption. d. reprod c. benefit d. harm	uction.
3	 When the plant seed begins to grow a is called	c. absorption. d. reprod c. benefit d. harm ith c. zooplankton. d. parrotf	uction.
3	 When the plant seed begins to grow a is called	c. absorption. d. reprod c. benefit d. harm ith c. zooplankton. d. parrotf	uction. ish.
3	 When the plant seed begins to grow a is called	c. absorption. d. reprod c. benefit d. harm ith c. zooplankton. d. parrotf ge things such as c. microbes. d. viruses	uction. ish.
3	 When the plant seed begins to grow a is called	c. absorption. d. reprod c. benefit d. harm ith c. zooplankton. d. parrotf ge things such as c. microbes. d. viruses it (V) or (X):	uction. ish.
3	 When the plant seed begins to grow a is called	c. absorption. d. reprod c. benefit d. harm ith c. zooplankton. d. parrotf ge things such as c. microbes. d. viruses it (/) or (x):	uction. ish.
3	 When the plant seed begins to grow a is called	c. absorption. d. reprod c. benefit d. harm ith c. zooplankton. d. parrotf ge things such as c. microbes. d. viruses it (/) or (x):	uction. ish.
2	 When the plant seed begins to grow a is called	c. absorption. d. reprod c. benefit d. harm ith c. zooplankton. d. parrotf ge things such as c. microbes. d. viruses it (/) or (x):	uction. ish.
2	 When the plant seed begins to grow a is called	c. absorption. d. reprod c. benefit d. harm ith c. zooplankton. d. parrotf ge things such as c. microbes. d. viruses it (/) or (x):	uction. ish.

1	(A) Choose the corre	ect answer:			
	1. The volume of one	liter of water has	a mass of		
	a. one gram.	b. one kilogram.	c. one milliliter.	d. one cubic centime	eter.
	2. When the water is	heated, its particle	es		
	a. move slower.		b. move faster.		
	c. move with the s	ame speed.	d. do not move.		
	Salt can be separa	ated by of	salty water.		
	a. melting	b. evaporation	c. freezing	d. condensation	
	 In plant's leaves, li during photosynthe 		Sun is converted into	o energy	
	a. sound	b. electrical	c. chemical	d. kinetic	
	(B) Study the following then put (✓) or (A)		present particles of	three states of mat	ter,
	Figure (1)	Fiç	jure (2)	Figure (3)	
	1. Figure (1) represen	nts solid matter.		()
	2. Figure (2) represer	nts liquid matter.		()
	3. By increasing the s	spaces between th	e particles of figure	(2), it will	
	change into solid s	tate.		()
	4. Particles of figure ((1) have more ene	rgy than particles of	figure (3).)
2	(A) Complete the fol	lowing sentences	•		
	An area that provid in it, is known as	des food, water an		organisms which live	е
	2. According to temper	rature, matter can b	e classified into	and objec	ts.
	3. Helium is not	or , so	it is considered as a	safe gas.	
	4. Without in	the leaves of plan	ts, gases can't move	in or out of the plar	ıt.
	(B) Give a reason for	the following:			
	When the temperate	ture of ice cubes in	ncreases, they will m	elt.	

3	(A) Write the scie	ntific term of each o	f the following:	
	1. They are change	jes in matter which a	re usually reversible	and
	don't affect its s	structure.		()
	2. It is the process	s by which matter cha	anges from liquid sta	ate to
	gas state.			()
	3. A tool used to n	neasure the length of	f wall.	()
	4. They are consu	mers that exist at the	e top of food chains.	()
	(B) What happens	if?		
	Plant's leaves of	łon't contain chloropl	hyll.	
			-,	
		Model I	Екат 6	
1	(A) Complete the	following sentences	::	
	1. The food of pla	nt is a type of	which is made in t	heir by
	photosynthesis	process.		
	Sunlight energy leaves.	convertsar	nd into gluco	ose inside the plant's
	3. Bacteria and fu	ngi are considered a	s organisms	s, while rabbits аге
	considered as .	organisms.		
	4. Particles of of their contains		over each other, so	they take the
	(B) Give a reason	for the following:		
		ical rainforest home	is made of leaves a	nd sticks.
		,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	(0) (1)			
2	(A) Choose the co			
		llowing matter has a		
	a. Water.	b. Milk.	c. Ice.	d. Air.
	In the presence without the nee	of water, seeds can d of	germinate at the be	ginning of growth
	a. soil.	b. rocks.	c. insects.	d. dry paper towel.
	3. Which of the fo	llowing living organis	ms can make their o	own food ?
	a. Hawks.	b. Mice.	c. Pine trees.	d. Caracals.
	4. If all grasses we ecosystem will	ere removed comple	tely from an ecosyst	em, rabbits in this
	a. increase.	b. decrease.	c. die.	d. not be affected.

(B) Choose from column (B) what suits it in column (A):

(A)		(B)				
	 Photosynthesis process Respiration process Decomposition process 	 a. it produces nutrients which are important soil fertility. b. it produces light which is important for plac. it produces oxygen gas which is important breathing. d. it produces carbon dioxide gas which is important for plants. 	ınts.			
	1 2	3	_			
3 (A	a) Put (🗸) or (X) :					
	We can differentiate between	n sugar and flour by texture.	,			
		ermal energy, it will change into liquid state.	(
3.	Plants and humans are simil	ar in the way of getting food.	(
	Human can eat plants and a		(
	What happens to?		,			
	The microorganisms if the se	eawater becomes warm.				
		odel Exam 7				
2. 3. <i>1</i>	and affecting many marine fo The gas that is produced fror A system of tubes through wl	o decreasing the number of fish conditions (,			
	are carried all over the plant.	(,)			
4. /	A property of matter by which and cold objects.	we can distinguish between hot				
	What happens to?	# P dut Re diknow duse a)			
	"	if the speed of its particles decreases.				
		· ······ operator its parasies decreases.				
2 (A)	Dut (v)					
	Put (V) or (X):					
		measure the temperature of a hot cup of tea.	()			
		e of some pieces of ice, they will melt.	()			
	Photosynthesis process takes	· ·	()			
	The first link in any food chair Give a reason for the follow		()			
		_				
	omorophym in piant's leaves f	nas an important role in photosynthesis proce	SS.			

(A) Choose the correct answer:				
All of the following materials can reach	the plant's	leaves, except		
a. nutrients.		dioxide gas.		
c. water.	d. soil.			
2. A snake is a predator for mice, while sr			for	
a. rabbit. b. frog.	c. eagle.	d. deer.		
Which of the following two living organi between them ?	isms don't h	nave direct food re	∍lationship	+
 a. Parrotfish and shark. 	b. Butterf	lyfish and shark.		
c. Triggerfish and shark.	d. Eagle a	and shark.		
Oil takes the of its container.				
a. volume b. shape	c. color	d. mass		
(B) Look at the opposite figures that represent the three states of matter, then compared the following sentences:	resent lete			
Matter in figure takes the sha its container but its volume doesn't char		Figure (A)	Figure (B)	
Particles of figure move faste that of figure and figure		2 . 0	a	
Particles of figure are not held together.		0 0 0 0	0.00	
Model Exc	ım (8)	Figure (C))	
1 (A) Put (V) or (X) :				
Phloem transports food materials from t	the leaves t	to the other parts		
of the plant.			()
2. In an ecosystem that contains rabbits, n	nice, eagle:	s and snakes only	/,	-
if snakes disappear completely, so eagle		_	()
3. A desert food chain doesn't contain any			()
4. A model of an airplane shows us how it	flies up into	the air.	()
(B) Give a reason for the following:				
Human can use helium gas safely.				
		44(4	111	
(A) Choose the correct answer:				_
Condensation changes the matter from .	eta	ite to stat	0	
11 1 44		juid d. liquid –		
2. The green plants can make their own for	od through		Joliu	
a. roots. b. leaves.				

a. insects.	b. plants.	c. fungi.	d. bacteria.
4. If the climate char		_	
a. increase.	b. decrease.	c. die.	d. not be affected.
(B) What happens to	?		
	particles of a liquid	if it changes into	o gas.
			•••••
(A) Complete the fo	llowing sentences	using the words	s below :
(s	olid – liquid – gas	- space - part	icles)
1. The state of matter shape is		e volume, but it	doesn't have a definite
2. Volume is the amo		t matter takes up	o.
3. We can classify th	e states of matter	into liquid,	and
4. Matter is made up		•	
(B) Choose from colo	•	it in column (A)	
(A)	The same of the sa	(B)	
	- : :- ! : :-		
1. Carbon dioxide	a. is a solid matte		
2. Sand	b. is a liquid matt		rocces
	c. is fleeded for p	niotosynthesis p	
1	2		
	Model	.xam 9	
(A) Chanca the carry	oct ancieror t		
(A) Choose the correct. 1. We can measure		uid by all the foll	owing units except
a. kilogram.	the volume of a hy	b. milliliters.	owing units except
c. cubic centimete	are	d. liters.	
2. Among chemical of			na is
a. cutting vegetab	_	b. boiling of	-
c. melting of choc		d. baking a l	
3. The kind of stems		_	
a. climb	b. tuber	c. runner	d. wood
			d. wood
4. Many insects are	considered as		core
a. producers.	ara.	b. decompos	
c. primary consum		u. secondar	y consumers.
(B) What happens if			
A emall lake is eve	posed to extreme h	ot climate for se	veral months.

2	(A) Complete the following sentences by using the words below:		
	(chemical – physical – rough – odor)		
	 Both of odor and texture of matter are considered from the prope of matter. 	rtie	S
	2. You can identify the of a juice by using the sense of smell.		
	3. We can describe the texture of sugar crystals by saying "it has crystal texture".		
	4. The ability of a piece of iron to rust is from the properties of matter	er.	
	(B) Give a reason for the following:		
	Both melting and freezing processes are considered as physical changes		
	and the state of t	•	
		· · ·	
3	(A) Put (V) or (X):		
	 Plant's stem has hairs that absorb oxygen gas from the air. 	()
	Birds are secondary consumers, because they eat insects that feed on plants.	f)
	Microorganisms are producers that small fish feed on to get energy.	ì	ì
	4. The speed of water vapor particles is greater than that of water particles.	7	ĺ
	(B) Look at the opposite model of balls that shows the particles of a matter then complete the following sentences:	er,	,
	This model represents a matter in state.	X	
	2. If we want to make changes in this model to show this matter in a liquid state, we should the distances between balls.		X
	Model Exam 10		
1	(A) Put (✓) or (X):		
	1. Light is important for plant growth.	()
	Water and carbon dioxide are absorbed by plant's roots to help the plant to grow.	1	١
	3. Light and sound are forms of matter.	ì	í
	4. Liquids don't take the shape of the container that they are placed in.	(١
	(B) Correct the underlined words :	(,
	Humans can get their food from air and animals. (1
	Oxygen gas is absorbed by plant's leaves to make photosynthesis	******)
	process.		.)

2	(A) Write the scientific te	rm of each of	the following):	
	1. A device used to exami	ne one tiny pa	rticle such as	a blood cell.	()
	2. The state of water when	n its temperat	ure is located	between	
	0°C and 100°C.				(
	3. The process by which the	he plant can n	nake its own f	ood.	()
	4. Parts of the plant that a	re responsible	e for reproduct	tion.	()
	(B) Give a reason for the	following:			
	Wood has definite shap	e and volume			
			(****************	
3	(A) Choose the correct an	swer :			
	1. We can measure the m		le by using a .	· · · · · · · · · · · · · · · · · · ·	
	a. thermometer.		b. ruler.		
	c. measuring tape.		d. balance		
	2. We can identify milk by	determining it	S		
	a. color and texture.		b. shape a	nd odor.	
	c. color and taste.		d. color an	d size.	
	3. To separate sand only f	rom salty wate	er, we can use	prod	cess.
	a. filtration b. ev	aporation	c. melting	d. free	zing
	4. Blood rich in carbon dio	xide gas retur	ns back to the	heart throug	h
	a. arteries. b. ve	eins.	c. lungs.	d. xyle	em.
	(B) The following figures :	show three m	odels of parti	cles of some	matter related
	to our planet Earth, co				111111111111111111111111111111111111111
	~0000000 _		7		
			00/	60	7
	Figure (1)	Figur	e (2)	Figure	(3)
	1. Beads of figure	could repres	sent the partic	les of a rock	on Earth's
	surface.				_
	2. Beads of figure	could repres	sent the partic	les of river wa	ater on Earth.

Final Examinations of some governorates

on the first term 2024

1	Cairo	Governorate	Leade	ers Language School	
(A) Pi	ıt (✓) or (X)				
	ots fix the plan				, , , , , , , , , , , , , , , , , , ,
		starts with bacteria.			
		s a chemical change	.		$=$ $\hat{\epsilon}$
		used to measure the			
	oss out the c		Ü		
W	ood – Iron –	Oxygen – Gold.		(*********	***************************************
2 (A) Co	mplete the	following sentences	using words betw	veen brackets :	
		oil – consumers –			
		produced during ph	otosynthesis proce	ess.	
		plants and animals.			
		igi are two examples	of		
4	is an ex	ample of liquid.			
(B) W	nat happens	if?			
Pla	nt leaves dor	n't contain chlorophy	IJ.		
	***************************************		***************************************	*4*************************************	
	1/14/47 17171111	***************************************		**********************	
(A) Ch	oose the cor	rect answer:		-	
		of its container.			
a. s	hape	b. color	c. volume	d. smell	
2. Ste	el is used in i	making hammers be	cause it is		
a. fl	exible.	b. hard.	c. transparent.	d. soft.	
3. Am	ong example	s of physical change	s is		
a. b	urning of wo	od.	b. rusting of ire	on.	
C. C	utting a pape	r.	d. burning of p	aper.	
4. The	suitable hab	itat for microorganis	-	· ·	
	ot water.	b. cold water.		d. boiled wate	er.
(B) For	m a food ch	ain by using the foll	owing organisms		
			– Hawk – Grass)		
	****			44 -4	

CONDITIONAL	Scien	nce Inspectorate
orrect answer :		
b. Decomposers	c. Rabbits	d. Consumers
rry the water and the nut	rients from the pla	nt root to the plants leaves
b. root	c. leaves	d. air
d to measure the mass	of objects.	
b. Measuring cup	c. Balance	d. Thermometer
sidered a chemical cha	nge.	
etables	b. Boiling water	er
colate	d. Iron rust	
these seeds can disper	rse by wind and v	why?
a column (B) what suits	b it in column (A):	c
	(B)	
a. it may destroy the	marine ecosysten	n.
	•	•
d. anything has volum	e and mass.	
for the following:		4
	reide the plant los	3V0e / \
		· ·
	rated by evaporal	ion. ()
a climb stem. finite shape and indefir		()
	b. root d to measure the mass b. Measuring cup sidered a chemical cha etables colate these seeds can disper a column (B) what suits a. it may destroy the r b. they are a small plas c. it's a copy that is si d. anything has volum 2. for the following: important for the plant. c process takes place in er and salt can be separa a climb stem.	b. Decomposers c. Rabbits rry the water and the nutrients from the plate b. root c. leaves deto measure the mass of objects. b. Measuring cup c. Balance sidered a chemical change. Stables b. Boiling water decoupled by wind and was these seeds can disperse by wind and was these seeds can disperse by wind and was the seeds of the marine ecosystem b. they are a small plastic pieces that are seeds to it's a copy that is similar to real thing decoupled anything has volume and mass. 2. 3. for the following: important for the plant.

Cairo (Governorace		Hadayek El Kobba E	ducational Zon
(A) Write the scient	tific term of each	of the f	ollowing :	
1. It is a process by	which a matter is	change	ed from liquid to solid	d state.

2. System that trans	sports nutrients, w	vater and	d glucose between t	
3. They are organis	me that food on th	ne dead	organisms hodice	
_	down into smaller		organisms bodies	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
4. State of matter th			ore than solid but	•
not completely from				
(B) Give a reason for	or the following:			
Gasoline is liquid	matter.			
				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
(A) Choose the corr	rect answer :		<u>-</u>	-
1. Plant takes		make its	s own food.	
a. water		b.	oxygen gas	
c. carbon dioxide	gas	d.	sugar	
2. A community that	t includes living or	ganisms	and nonliving thing	js is known
as				
a. digestive syste	em.	b.	respiratory system.	
c. ecosystem.		d.	vascular system.	
3. Oil takes the	of its containe	er.		
a. volume	b. shape	C.	color d. m	ass
4. Change color of i	ron when expose		_	Э.
a. physical			chemical	
c. temperature		d.	neither physical nor	chemical
(B) What happens if				
Stomata in plant's	s leaves are abse	nt.		
******************************	***************************************		***********	

(B) What happens if ...?

4. Light is import	the temperature of so ant for plant growth. Iffect of cooling on lie		ll freeze.	(1
	_	ording to force and	spaces between	partic	les)
4 Caire	Governorate	Scie	nce Inspectorate		
1 (A) Choose the c	orrect answer :				
	solid state of matter.				
a. Water	b. Ice	c. Steam	d. Water var	oor	
2. The coral blead	ching means that, the c				
a. red.	b. white.	c. green.	d. black.		
3. The measuring	g unit of mass is	-			
a. liter.	b. gram.	c. cm.	d. ml.		
4. Potato plant ha	_				
a. upright	b. climb	c. tuber	d. runner		
(B) Give a reasor	for the following:				
The oil is a ma	•				

(A) Complete co.	sh of the fellowing.				
	ch of the following:	o franc			
	piece of iron to rust i		perues.		
	process in which mat	_	quid etato to coli	d state	
	ganisms that decomp			u State) <u>.</u>
	chain by using the wo				
(5) (5) (10)		s – Snake – Rat)	Rets ,		
*4***	,				
3 (A) Put (✓) or (X)					
	nts can make their ow	•	vers.	()
	d are forms of matter.			()
	ttracted to the magne	et.		()
4. The matter has				()
(B) What happens					
rife plant is pla	aced in a dark place for	or many days.			

	The Egyptian international school
(A) Choose the correct answer :	
1. The stomata exist on of the	plant.
a. stems b. leaves	c. root hairs d. stems and leave
2. Many insects are considered as	\$ \$P\$(\$ 0 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
a. producers.	b. decomposers.
c. primary consumers.	d. secondary consumers.
3. Both and have the	same state of matter.
a. wood – water b. plastic – oil	c. wood – milk d. wood – plastic
4. To measure the temperature, we ca	ın use a
a. thermometer.	b. measuring tape.
c. scales.	d. cylinder.
(B) Write the scientific term:	
An area in the ocean where small pie	ces of coral reefs are cared for. (
 The plant changes the	rgy into energy stored in the plant
 The plant changes the	rgy into energy stored in the plant cess. al to turn completely into white is known I form a new substance, this new substan- dered as a
 The plant changes the	rgy into energy stored in the plant cess. al to turn completely into white is known I form a new substance, this new substan- dered as a
 The plant changes the	rgy into energy stored in the plant cess. al to turn completely into white is known I form a new substance, this new substan- dered as a
 The plant changes the ene food during the photosynthesis prode A phenomenon that causes the corras When two substances combine and is called a Cutting a paper into pieces is considered as a change. 	rgy into energy stored in the plant cess. al to turn completely into white is known I form a new substance, this new substan- dered as a
 The plant changes the	rgy into energy stored in the plant cess. al to turn completely into white is known I form a new substance, this new substan- dered as a
food during the photosynthesis produced. 2. A phenomenon that causes the consistences combine and is called a	rgy into energy stored in the plant cess. al to turn completely into white is known I form a new substance, this new substan- dered as a
 The plant changes the	rgy into energy stored in the plant cess. al to turn completely into white is known form a new substance, this new substance dered as a
 The plant changes the	rgy into energy stored in the plant cess. al to turn completely into white is known form a new substance, this new substance dered as a
 The plant changes the	rgy into energy stored in the plant cess. al to turn completely into white is known form a new substance, this new substance dered as a
 The plant changes the	rgy into energy stored in the plant cess. al to turn completely into white is known form a new substance, this new substance dered as a
 The plant changes the	rgy into energy stored in the plant cess. al to turn completely into white is known I form a new substance, this new substance as a

6	Giza Governorate	Awssem	Educational Zone	e	
(A) Choose	the correct answer :		· · · · · · · · · · · · · · · · · · ·		
	icles are packed tightly w	rith each other in			
a. water.		c. wood.	d. vinegar.		
2. Photosy	nthesis process takes pla	ce inside	· ·		
a. roots.	b. stem.	c. leaves.	d. flowers.		
3. Fruit sala	ad is considered a	***			
a. mixtur	e. b. melting.	c. compound.	d. heating.		
4. Without	the plant can't gre	ow well.			
a. insect	s b. rocks	c. sunlight	d. moonlight		
(B) Form a	food chain by using the f	following organisms:			
	(Small fish - Mici	roorganisms – Seabii	rd)		
5	()				
2 (A) Put (V)					
	ticles move faster than liq	The state of the s		()
_	anisms can make their ov			()
	s a good conductor for he			()
	s the plants through stom			()
(B) Give a r	eason for the following:				
Leaves a	re important for the plant				
			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		***
• • • • • • • • • • • • • • • • • • • •	***************************************	***************************************	***************************************		
(A) Comple	te the following sentence	es by using the follow	ing worde :		
(ii) comple		hemical – model – pr			
1 is	s a copy that is similar to	and the second s	•	or	
work like.		and roas aming to onlow	What it looks like	Oi	
2. Any food	chain starts with				
3. Plants tal	ke gas from air to	make their own food.			
	and burning reactions are				
	e scientific term :	3			
They are	consumers that feed on t	he primary consumers	i. ()

7 Alexandria Governorate

East Educational Zone

1	(A) Choose the correct	answer:				
	1. The particles of wate		en it gain energy.			
	a. faster		b. slower			
	c. as the same		d. vibrate			
	2. The components of r	mixture can be sep	arated by			
		. filtration.	c. mixing.	d. shaking.		
	3. The matter h	nas definite volume		_	ntaine	r.
		. liquid		d. space		
	4. Coral reefs are consi	idered as				
	a. algae.		b. producers.			
	c. ecosystem.		d. bacteria.			
	(B) Give a reason for th	ne following :				
	Frog is a secondary of	_				
2	(A) Complete the follow	wing sentences :				
	1. Mixing baking soda w	vith vinegar is cons	idered as	hange.		
	2. The carry oxy			_	š.	
	3. Coconut seeds dispe			, ,		
	4. The plant absorbs sur		•	in the l	eaves	
	(B) Write the scientific t		·			
	They are pores on the		int's leaves that allo	·W		
	gasses move in and o			(.,	***	}
	-			<u> </u>		
}	(A) Put (✓) or (X):					
	1. Matter can be change	ed from state to ano	ther by changing te	nperature.	()
	2. Water pollution doesn	n't affect food chain	s in the ecosystem.		()
	3. Phloem transports glu	ucose to all parts of	f plant.		()
	4. Ice and glass are exa	imples for liquid sta	ite of matter.		()
	(B) What happens to	?				-
	Solid matter particles					
		The state of the s				

Alexandria Governorace

1 (A) Choose the correct	answer:					
1. Plants useg	as during the p	hotosynthesis pr	ocess.			
a. nitrogen		b. oxygen				
c. carbon dioxide		d. sugar				
2. Lion is from						
a. producer.		b. grass eat	ers.			
c. meat eaters.		d. decompo	sers.			
3. The particles are page	cked tightly with	n each other is				
a. water.		b. iron.				
c. oxygen.		d. all the pre	evious.			
The measuring unit of the control of the co	of mass is	141991				
a. liter. b	. gram.	c. cm.	d. ml.			
(B) Cross out the odd v	word :					
Grass - Rat - Hawk	. – Snake.			()
 2is a copy that 3. One example of decorate 4. Any matter is made to (B) Give a reason for the Food is very importa 	omposers is up of millions of ne following :	4 4 4 4 2 4 2 4 4 4	it looks like.			
				,,	*******	,,
③ (A) Put (✓) or (X):	-	_				
1. Habitat loss is one of	the main cause	es of extinction.			()
2. The roof of desert ho	ome is similar to	rainforest home			()
3. Kilogram = 100 gram	is.				()
4. Air enters plants thro	ugh roots.				()
(B) Form a food chain k	y using the fol	llowing organism	is:			
(Frog –	Grass - Gras	shopper – Snak	e – Owl)			
			_			

Science Inspectorate

9	Menout	ia Governorate	Shebeen El-	Koum Education	al Zone	:
(A) C	omplete the	following sentences	by using words b	etween brackets	s :	
		(gram – reproducti	on – chemical – p	hloem)		
1	vessels	transfer food from le	eaves to all parts o	f plant.		
2. Ru	isting iron is f	romchange	of matter.			
3	is the fo	unction of flower in p	lants.			
4	is the n	neasuring unit of mas	SS.			
(B) M	lake a food c	hain from the follow	ing living organis	ms :		
		(Decomposer – L	ion – Deer – Gras	s)		

(A) P	ut (🗸) or (X)	:				
1. Air	is consider a	s a mixture which co	mposed of different	gases.	(
2. Hu	man activitie	s in environment affe	ect only living organ	nisms.	(
3. Me	easuring cup	used to measure the	volume of liquid.		(
4. Tul	ber stems gro	ow and extend above	e the soil.		(
(B) G	ive a reason	for the following:				
So	metimes cora	al reefs change into v	white color in ocea	ns.		
			**** **********************************	<	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	1**************************************	,,	,,,, , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	****** * ******************************		
(A) C	hoose the co	rrect answer :			-	
1	return b	ack the blood rich in	carbon dioxide to	the heart.		
a. /	Arteries	b. Two lungs	c. Xylem vess	els d. Veins		
2	from no	nliving things in eco	system.			
a. \$	Soil	b. Fungi	c. Bacteria	d. Birds		
3. ln .	proce	ess the water change	es into ice.			
a. ı	melting		b. freezing			
C. 6	evaporation		d. condensation	on		
4. The	e particles of	matter become very	faraway from each	other in	4+	
a. \	water.	b. iron.	c. oxygen.	d. wood.		
(B) W	hat happens	when?				
	- "	expose to sunlight.				
		[
	***** *****************	***************************************			*	

10	El-Charb	a Covernolate	Sci	ience Inspectorate		
1. W 2. A 3. B	e can use rteries carry blo acteria and fun	ollowing sentences in making hamn ood rich in an gi are considered s a change,	ners, because it ndfrom , so they o	the heart to body o	cells.	
	Vhat happens teabirds if they l	o? puilt nests in mounta		water habitat.	,, ,,,,,,,,	
2 (A) V	Write the scien	tific term of each of	the following:			
1. A	tool that is use	d to measure the len	gth of a wall.	(,,)
2. Th	ne gas that is u	sed in photosynthes	is process.	()
		rganisms of one type)
4. A	part of plant tha	at carries water from	roots to leaves.	(()
(B) G	iive a reason fo	or the following:				
Al	though water v	apor is invisible, we	can see steam o	during cooking.		
• • • •)))/(//////////////////////////////////		>	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
(A) F	out (🗸) or (X) :	···				
		e process of removin	g salt from wate	r by cooling only.	()
		are examples of mat	-	, ,	()
3. Pa	articles of liquid	have a random arra	ingement.		()
4. Co	oconut seeds d	ispersed by water be	ecause they are	light.	()
(B) C	ross out the o	ld word and name t	he group :			
	-	am – Sea star – Sea				
		is:				
۷.	The name of tr	e group is :				
11	Kali El-Shei	kh Governorate	Scie	ence Inspectorate		
1 (A) C	hoose the corr	ect answer :				
1	carry blo	od rich in oxygen fro	m the heart to a	ll body parts.		
	Veins	b. Phloem	c. Arteries	d. Xylem		
2. Pc	otato has a	stem.				
a.	wood	b. tuber	c. climb	d. runner		

	3. Particles of	, have more therr	nal energy than tl	nat of water.	
	a. iron	b. helium	c. wood	d. ice	
	4 are cons	idered primary cons	sumers.		
	a. Algae	b. Coral reefs	c. Zooplankto	ons d. Sharks	
	(B) Write the scient	ific term :			
	Turning the color	of coral reefs comp	letely into white.	(****** ** *******
2	(A) Put (V) or (X):				
	1. Xylem transports	water and nutrients	from leaves to pla	ant's roots.	(
	2. Rusting of iron do	pesn't change the st	tructure of iron.		(
	3. The volume of ar	amount of water is	measured by the	measuring cup.	(
	4. An iron nail is attr				(
	(B) Give a reason for				• 1
	Atmosphere is co	onsidered as a gase	ous mixture.		
	***********	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		,,,,,,	
3	(A) Complete the fo	ollowing sentences	hy using the wor	ds hetween brack	/atc :
	, , , , , , , , , , , , , , , , , , , ,		- gas - rubber)		icis.
	1. Electric wires are				
	2. When a cube of i				tata
	3. The matt			5 IIRO a SI	.ate,
	(B) What happens w		spe and volume.		
		nt of seawater for a	while		
		in or oddward! for a	willo.		
			, , , , , , , , , , , , , , , , , , , ,		***********
1	2 Beheira	Covernorare	Scie	nce Inspectorate	
1	(A) Choose the corr	ect answer :			
	1 plant has				
	a. Potato	b. Tomato	c. Vine	d. Pine	
	2. When there is a g	entle rain in the des	ert, the desert eco	osystem may be	
	a. destroyed.	b. improved.	c. polluted.		
	3. We can measure	of a liquid b	•		
	a. length	b. volume	c. mass	d. temperature	9
	4. Which of the follow	ing is evidence that	a chemical change		
	a. Smoke billowing			balloon filled with	
	c. Cracking nuts.		d. Melting of a		

(B) Give a reason for	or the following:			
Soil fertility deper	nds on decomposers	*		

(A) Write the scient	ific term of each of	the following :		
1. It is a condition in	which coral reefs tu	rn completely in	to white.	(
2. A material that is	used to build the roo	fs of cold weath	er homes.	(
3. The ability of mat	erials to transfer hea	t and conduct e	lectricity.	(
4. The consumer th	at hunts and eats an	other animal.		(
(B) What happens if	·?			
We remove the fl	ower of a plant.			
				.,

		***************************************	***************************************	
(A) Put (V) or (X) :				
1. Coconut seeds ca	an float on water			1
	t considered from ca	uses of extinction	n	(
	vegetable together th			(
-	nove freely more than	, ,	_	(
	in by using the follo			,
(b) Form a rood che	(Hawk – Grass –			
	·		•	
				
3 Fayoum	Covernorate	Scie	ence Inspec	torate
(A) Choose the corr	ect answer:			
	onliving part of ecosy	/stem		
a. Fungi	b. Plant	c. Soil	d Gra	sshopper
_	rocess takes place in		u. 0,u	сопоррог
a. roots.	b. stems.	c. leaves.	d. flow	ers.
	nit of volume		G. 11011	
a, cm ³ .	b. gram.	c. cm.	d. kg.	
	at which water change		٠٠. ١ ٠٠	
a. Evaporation			d. Free	ezina
(B) What is the imp		o. monnig	Q. 110	3
(b) imat is the imp	ortanice of stell :			

	is one of the main causes of extinction.	
	d burning reactions are from physical change. ansparent material used in making eye glass.	
	etween producer organisms and decomposer organism	ns by gi
A) Match colu	mn (B) to column (A) :	
(A)	(B)	
1. Lion	a. from an example of matter that attract to magnet.	
2. Iron	b. meat eaters.	
3. Liquid	c. feeds on small fish.	
4. Seabird	d. has medium spaces among particles.	
	2	awk
. This is consid	2. 3. 4. Opposite figure then answer: der a Sneed on Grasshopper	1
This is consider. Snake can feather.	2	ses
This is consider. Snake can fee and	2. 3. 4. Opposite figure then answer: der a Grasshopper Grasshopper Correct answer:	ses
This is considered to the cons	2	ses
This is considered and	2	ses
A) Choose the The	2	ses
Choose the The	2	ses
Choose the The	2	ate

	son for the follow sed to fill balloons	-		
			. , , , , , , , , , , , , , , , , , , ,	
2 (A) Put (V) or	(x) in front of ea	ach sentence:		
		milar to the roof of rain	forest home.	(
2. Green plant	s can grow well i	n a dark room.		(
3. Gram is the	measuring unit of	of mass.		(
4. Xylem is im	portant for plants	to transfer water from	plant's roots to leaves	3. (
(B) Form a foo	d chain by using	the following organism	ns:	
	(Rabbit -	- Snake – Hawk – Gra	ss)	
			·	
(A) Complete	de a fellocation and		I - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	
(A) Complete	_	ntences using the word		
1 A io	_	oral bleaching – oxyg	en – Hower)	
	a reproductive p	· ·		
3. Seabirds fee		from photosynthesis p	UCESS.	
		e color of coral reefs tu	rns completely into w	hite
				THUS.
(b) LOOK at the	a ronowing pictu	res, then complete the	tollowing diagram :	
1.	process	2	process	0 0
Solid state		Liquid state	Gas	state
15 Sof	as Commences	Sc	i <mark>ence Inspectorate</mark>	
(A) Choose the	correct answer	•		
		close to each other.		
a. gold	b. steam	c. milk	d. oxygen	
		changes is	3011	
a. digestion		b. burning o	of wood.	
c. making a		d. melting o		
_		ecause they are		
a. light	b. spiny	c. heavy	d. smooth	

4. in the plant leaves allow air to enter or move out the plant.

c. Stomata

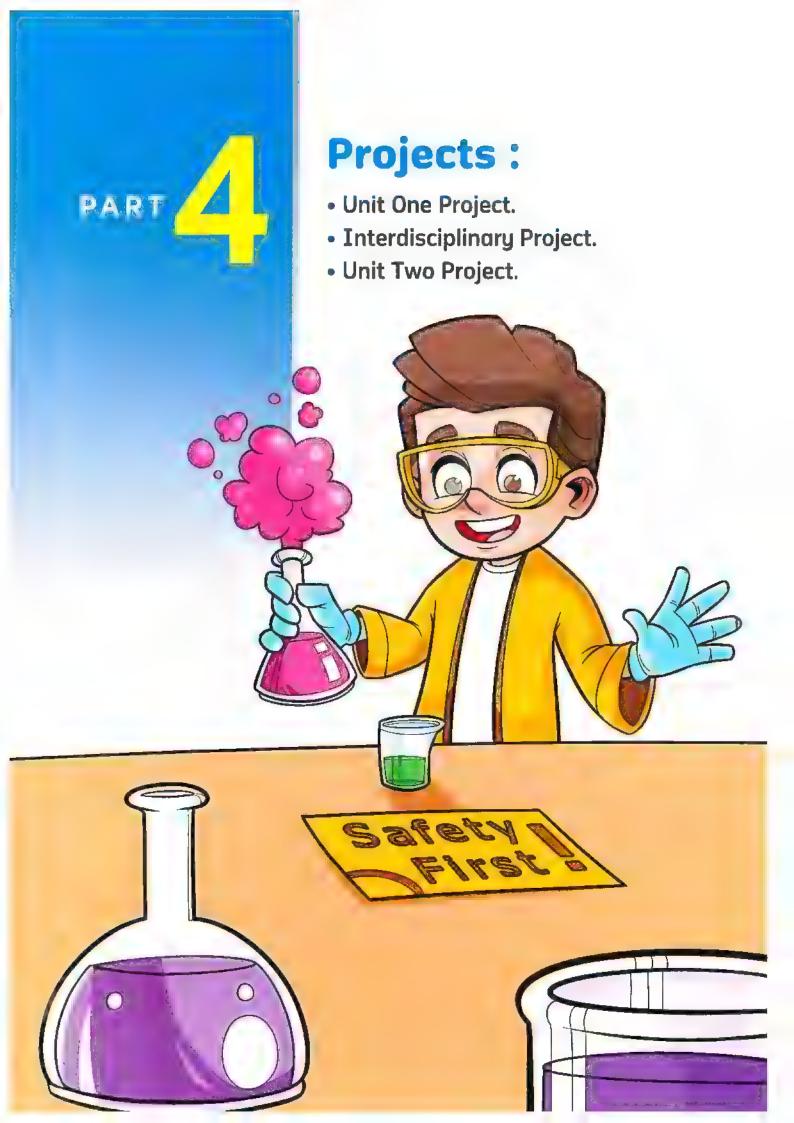
d. Chlorophyll

b. Phloem

a. Xylem

(B) Give a reason for the following:	
Roots have important role in photosynthesis process of plants	;.

(A) Complete each of the following:	
The interaction among many food chains is known as	
The nutrients and oxygen are transported through the blood to the system.	the body cells by
3. To separate salt from salty water we can use process.	•
4. Particles of matter have a lot of energy and spaces.	
(B) What happens to?	
The speed of particles of liquid when it changes into gas.	
3 (A) Put (✓) or (X):	
 Both gold and milk have definite shape. 	()
The roof of desert home is made up of strong stones.	()
The first link in any food chain is a consumer.	()
4. Phloem transports water and nutrients from roots to leaves.	()
(B) Look at the following figures, then write the suitable materi	ial which is used
in making these tools :	
1	



UNIT ONE Project

Build a Miniature Ecosystem

- In this project, you will build a "Miniature Ecosystem" which means a very small ecosystem using simple tools and materials.
- Your miniature ecosystem will include some nonliving things and also some different living organisms that represent producers, consumers and decomposers to show how energy transfers among living organisms in an ecosystem.

Note

In your miniature ecosystem, you have to get real living Beetles and Earthworms that you may find in gardens or your surrounding environment, also you can buy them from pets shops.



Steps

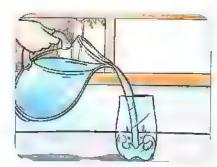
1 Cut the plastic bottle into two halves using the scissors as shown.



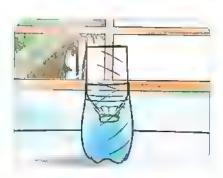
2 Cover the opening of the upper part of the bottle with the small piece of cloth and fix it tightly with a rubber band.



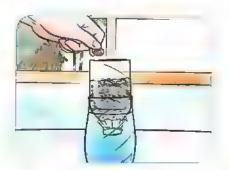
3 Pour some water in the lower part of the bottle.



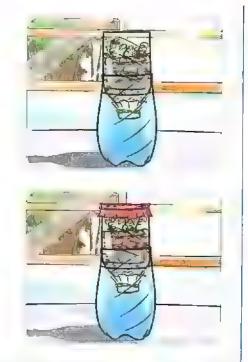
4 Invert the upper part of the bottle into the lower part as shown (the water should cover the piece of cloth).



5 Put some soil in the upper part of the bottle and plant the bean seeds in it, then put the project in a sunny place.



6 When the bean seeds begin to grow, add the dead leaves, earthworms, and beetles to the upper part of the bottle.



7 Close the upper part of the bottle using the piece of cloth with small holes and fix it tightly with a rubber band.

- Now, you have made your miniature ecosystem that contains different living organisms and nonliving things, where:
 - Soil and water are nonliving things.
 - Bean plants represent producer organisms.
 - Beetles represent consumer organisms.
 - Earthworms represent decomposer organisms.
 - Dead leaves represent dead organisms.

INTERDISCIPLINARY Project

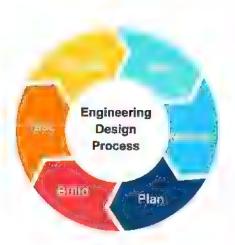
Waste Not, Want Not

- ▶ Plastic is a common material that we always use in our lives in many purposes such as :
 - · Packing and storing our food.
 - Transporting water.
 - Manufacturing some medical tools.
- However, much of the plastic we use are thrown away. Plastic bags and water bottles are the most items that people throw into the environment.



- As you have learned that plastic is one of the most harmful waste because it is especially dangerous to animals, for example :
 - In the River Nile, scientists have found that most of fish have swallowed plastic caused by human pollution and this leads to death of fish.
- Humans try to decrease the bad effects of plastic on the environment in different ways, such as:
 - Collecting plastic trash along the shore.
 - Reusing the plastic items instead of throwing them.
- ▶ In this project, use the steps of the Engineering Design Process that you have learnt in the previous educational grades to create a design of a "Mini-garden" at your home using empty plastic bottles.





Idea

Create a "Mini-garden" using empty plastic bottles.





Plan					
			- , , ,,, ,, ,		•
				1 + + + - + + + + + +	
			h b +45+4 #	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
				* * * * * * * * * * *	
	134 17			** * * * * * * * * * * * * * * * * * * *	
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	,				
		5+ f 4 + = 3x 3 x			N

Inchange		
Improve		
Vrite down your ideas to	improve your "Mini-gar	den" design.

Build

UNIT TWO Project

Slippery Sands

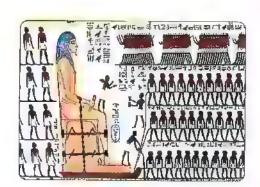
In this project, you will make a research about how water can be used to make sand more slippery.

Read the following paragraph :

 Scientists and historians have been wondering how the ancient Egyptians were able to move very large blocks of stones across the desert sands.
 Many scientists and historians have tried to find the answer of this question.

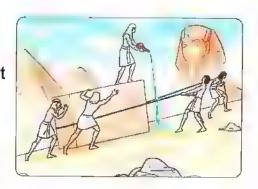
· Historians :

- Historians have looked at one of the ancient Egyptians wall painting that shows how did they move a huge statue across the desert sands.
- In the wall painting, historians have observed a person pouring a liquid from a jar in front of the sled. Historians believed that this was related to a holy ceremony.



Scientists:

- Scientists looked at the same painting in a different way.
- Scientists had a theory that may be ancient Egyptians may have added water to the sand to make it more slippery, so they could move the huge statue more easily because the friction between the sled and the wet sand decreased



 Scientists said that sand particles are rough, but when water is added to sand, this makes the sand particles come closer and stick together, which decreases the friction between the sand particles and any object moving on them. Use the previous paragraph or online resources to write your claim, evidence and scientific explanation for the following question. The Question Does adding water to the sand make the sand more slippery? My Claim **My Evidence** My Scientific Explanation



SCIENCE

Guelo Attitude



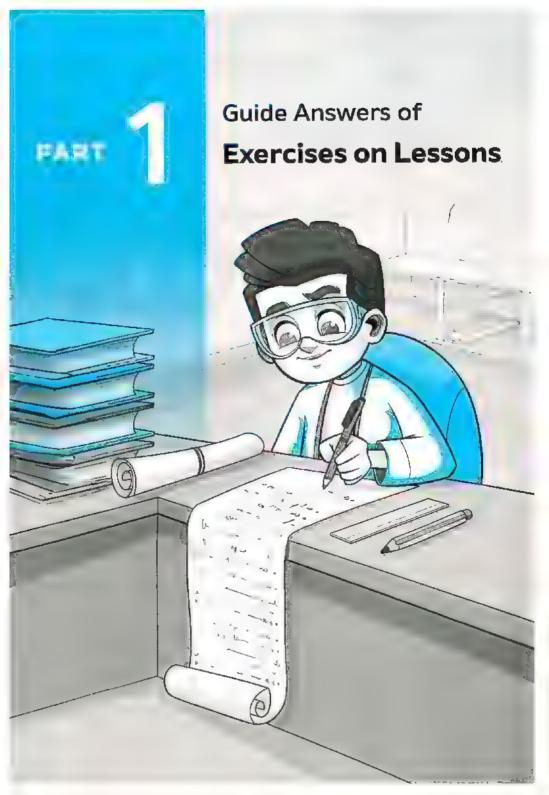
Part

Guide Answers of Exercises on Lessons (Page 3)

Part 2 Guide Answers of Self-Assessments (Page 20)

Part 3 Guide Answers of Final Examinations (Page 31)





Concept (1.1)

Exercises on Lesson

- 1 1.a 2.b 3.c 4.b 5.b 6.c 7.d 8.c
- 2 1.b 2.e 3.a 4.d
- 3 1. (**x**) 2. (**x**) 3. (√) 4. (√) 5. (√) 6. (**x**) 7. (**x**)
- 4 1. leaves roots.
 - 2. water nutrients roots.
 - 3. photosynthesis leaves.
 - 4. roots leaves 5. the Sun
 - 6. sugar leaves 7. water
- 5 1. Carbon dioxide gas.
 - 2. Water.
- 3. The stem.
- 4. Photosynthesis process.
- 5. Oxygen gas. 6. The Sun.
- Oxygen gas (all items are plant's needs to grow, while oxygen gas is released during photosynthesis process).
 - Sunlight (all items are parts of the plant, while sunlight is an important source of energy for plant growth).
- Because the roots help the plant to absorb water and nutrients from the soil.
 - Because it helps the plant to make its own food.

- Water and nutrients will not be carried from the roots to the leaves.
 - Plants can't make their own food during photosynthesis process.
 - The plant can't make its own food during photosynthesis process.
- **9** (b).

- 11 1. b 2. b 3. a 4. c 5. d 6. c 7. d
- 2 1. (*) 2. (*) 3. (*) 4. (*) 5. (*) 6. (*) 7. (*)
- 1. Photosynthesis
 - 2. Carbon dioxide 3. dark green
 - 4. roots
- 1. Photosynthesis process.
 - 2. Plant's leaves.
 - Oxygen gas.
- 4. Sugar.
- 5 1. carbon dioxide gas oxygen gas
 - 2. water roots. 3. the energy
 - 4. water sunlight
- 6 Because they can make photosynthesis process.
- 7 1. It will germinate and grow well.
 - It will germinate and make sprouts for a while, then it will die.

- The plant can't make photosynthesis process and it will die.
- 1. figure (A) figure (B).

- 1 1 c 2.b 3.b 4.c 5.b 6.c 7.c 8.a 9.b 10.c 11.c 12.d 13.c 14.b 15.a 16.b
- 2 1 1.e 2.c 3.a 4.d 2 1.d 2.e 3.b 4.c 5.a
- 3 1. (√) 2. (≭) 3. (≭) 4. (√) 5. (≭) 6. (√) 7. (√) 8. (≭) 9. (√) 10. (≭) 11. (√) 12. (≭) 13. (≭) 14. (√) 15. (≭) 16. (√) 17. (√) 18. (≭)
- 4 1. root hairs 2. the stem
 3. tuber 4. runner
 5. upright 6. gases
 7. leaves 8. oxygen
 9. Phloem
- 5 1. Plant's root. 2. Root hairs. 3. Plant's stem. 4. Xylem.
 - Climb stem.
 Runner stem.
 Potato plant
 Stomata.
 Chlorophyll.
 - 11. Carbon dioxide gas.
- 1, fix nutrients
 2, root hairs water

- 3. xvlem
- 4. climb tuber
- 5. wood upright
- 6. runner stems, 7. stomata
- 8. narrow.
- 9. sugars proteins
- 10. pnotosynthesis phloem.
- 11. chlorophyll the sunlight.
- To increase the amount of absorbed water and nutrients that the plant needs from the soil.
 - Because they transport water and nutrients from roots to the plant's leaves.
 - 3. To allow gases to move into and out of the plant.
 - Because chlorophyll absorbs the energy from sunlight that helps the plant to make photosynthesis process.
 - Because plants produce oxygen gas during photosynthesis process which is important for all living organisms to breathe.
- The plant can't absorb water and nutrients from the soil and also can't be fixed in the soil.
 - Gases can't move into or out of the plant's leaves and the plant will die.
 - The plant can't absorb the energy from sunlight and can't make photosynthesis process.
 - It can't make its own food and it will die.

- 9 (1) soil.
- (2) water
- (3) nutrients
- (4) xviem.
- (5) leaves
- (6) flowers
- (7) food
- (8) photosynthesis
- 10 1, red.
- 2. xvlem

Exercises on Lesson 4

- 3. h 1 c 2 0
 - 5. h 6. c 10. c.
- 7. b 8. b
- 9 6
- 11. d 12. d
- 13. b.
- 7 1. (*) 2. (1) 3. (*) 4. (x)
 - 6. (1) 7. (×) 8. (1) 5. (X)
 - 9. (🗸) 10. (🗸)
- 3 1, heart
- 2. Heart
- 3. one-way
- 4. Arteries
- chemical
- photosynthesis
- 7 seeds
- 1. Xvlem.
 - 2. Circulatory system.
 - 3. Heart.
 - 4. Blood capillaries.
 - 5. Plant transport system.
 - Arteries.
- Veins.
- 8. Glucose sugar.
- 9. Phloem.
- Flowers.
- Plant reproduction.
- 5 1. glucose
 - 2. leaves the nose the mouth.
 - 3 the heart blood vessels blood.
 - 4. glucose -- oxygen
 - circulatory.
 - 6. two atria two ventricles.
 - 7. leaves

- 8. xylem phloem
- 9. heart xviem roots
- 10. light chemical
- seeds reproduce.
- 12. arteries veins blood capillaries.
- 6 1. Because xy em carries water and nutrients from the roots to the leaves.
 - 2. Because flowers produce seeds for the plant that help it to reproduce.
- 1. Plants can't get their needed energy to survive and grow.
 - The plant can't produce seeds. that help it to reproduce.
- 8 (1) plant parts. (2) blood.
 - (3) xylem.
- (4) arteries.
- (5) phloem.
- (6) veins.
- (3) Vessels move glucose
 - (1) Light from the Sun
 - (4) Plant parts use the glucose
 - (2) The leaves transform light eneray
- 10 1. a vein.
- an artery.
- 3.(1)-(2)
- 4. circulatory

- 2. d 3. a 4. c 1 1. b 5. d
- 2 1, b 4. c 2. d 3. a
- **3** 1. (**★**) 2. (**√**) 3. (**√**) 4. (x)
 - (×)
 (√)

- 4 1. water.
- 2. spiny
- 3. apple
- 5 1, coconut maple (dandelion)
 - 2. spines.
- 3. light seeds.
- 1. Because seeds can stick on animals fur or being eaten by animals and come out with their stool
 - Because they are light seeds.
 - 3. Because their seeds are spiny seeds

Minimi Examilian Concept/11

- (A) 1, b 2, c 3, b 4, d
 - (B) It will germinate and grow well
- 2 (A) 1. (★) 2. (✓) 3. (★) 4. (✓)
 - (B) Because they are spiny seeds.
- (A) 1. Water. Flowers.
 - The Sun. 4. Potato plant.
 - (B) 1. figure (A) figure (B). 2. soil

Month Examile on Concept (1-1)

- 2. chemical (A) 1, water 3. heart 4 wood
 - (B) Because plants produce oxygen gas during photosynthesis process which is important for all living organisms to breathe.
- 2 (A) 1, c 2. d 3. b 2. Xylem (B) 1. leaves

- (A) 1. b 2. d 3. h 4. h
 - (B) 1, circulatory
 - 1 Heart.
 - (2) Vein.
 - (3) Artery.
 - (4) Blood capillaries.

Echapter 1

Exercises on Lesson

- 3 h 4 c
- 1. c 2. d 5. d 6 b 7 c
- 2 1. (34) 2. (1) 3. (1) 4. (1) 5. (1) $6.(\checkmark)$
- Ecosystem. Ecosystem.
- 4 1. plants (grasses) soil. ecosystem.
 - an ocean a desert.
- To get energy as they cannot produce their own food.
- The hawk moves away to search for food in another ecosystem.
- 1. (A) and (B) (C)
 - 2. (B)
- 3. (B) and (C)

- 1. b 2. d 3. b. 4. c
 - 5. a 6. b 7 b 8. d
 - 12. b 9. b 10. c 11. d 16. b 13. c 14. c 15, c
 - 17. d 18. b 19. c 20. b
 - 21. d

- 2 1. c 2. d
- 3 1. (*) 2. (*) 3. (√) 4. (√) 5. (*) 6. (*) 7. (√) 8. (*)
 - 9. (*) 10. (*) 11. (*) 12. (*)

3 a

- 13. (*) 14. (*)
- 4 1. Photosynthesis process.
 - 2. The Sun.
 - 3. Plants (Producers).
 - 4. Glucose.
 - 5. Carbon dioxide gas.
 - 6. Oxygen gas
 - 7. Plants (Producers).
 - 8. Decomposers.
 - 9. Decomposition process.
 - 10. Food chain.
 - 11. Prey.
- 12. Predator.
- 5 1. energy
 - 2. water carbon dioxide gas
 - 3. food.
 - 4. glucose sugar oxygen gas
 - 5. producers
 - 6. consumers 7. plants.
 - decomposers.
 - sers. 9. primary
- 10. nutrients
- 1. To get his needed energy to do his activities
 - Because it is absorbed by the plants leaves to make their own food and grow, then humans and animals eat these plants.
 - Because consumers cannot make their own food.
 - Because decomposers return nutrients of dead organisms back to the soil.

- The plants cannot make their own food by photosynthesis process, so there will be no life on Earth.
 - The secondary consumers will move away to another place to search for food or they will die.
 - Dead organisms will not be decomposed and their nutrients will not return back to the soil.
- 8 (1) Grasses (2) Duck
 - (3) Fox
 - a. tertiary
 - b. decomposers
 - c. light photosynthesis
 - d herbivores
- 9 1. a plant 2. bacteria
 - 3. primary
- 4. eagle
- 5. soil

- 1 1.d 2.b 3.c 4.b
 - 9. 0
- 2 1. (*) 2. (√) 3. (*) 4. (√)
- 5. (√) 6. (√) 7. (×)
- 3 1. food web. 2. producers.
 - 3. secondary consumer.
 - 4. primary consumers.
- 4 1. d 2. c
- 5 1.a 2.d 3.b 4.d

Exercises on Lesson 4

- 11.b 2.d 3.d 4.a
- 2 1. (\(\sigma\) 2. (\(\sigma\) 3. (\(\mathbf{x}\) 4. (\(\mathbf{x}\))
- 3 1. To disperse their seeds to other places.
 - Because restoration ecology is important to rebuild habitats that are damaged.

Model Examilian Concept (1.2)

- 1 (A) 1, b 2, a 3, d 4, c
 - (B) Dead organisms will not be decomposed and their nutrients will not return back to the soil.
- 2 (A) 1. (★) 2. (★) 3. (★) 4. (✔)
 - (B) Because they cannot make their own food as they cannot get energy directly from the Sun.
- (A) 1. energy
 - glucose sugar oxygen gas
 - primary
- 4. ecosystem.

(B) d

Model-Exam (2) on Goncept (4:2)

- 1 (A) 1. b 2. b 3. a 4. d
 - (B) Because consumers cannot make their own food.
- (A) 1. The Sun
 - 2. Producers (plants).
 - 3. Prey.
- 4. Food chain.
- (B) 1. producers. 2. secondary

- 3 (A) 1. e 2. c 3. d 4. a
 - (B) The plants cannot make their own food by photosynthesis process, so there will be no life on Earth

Concept (1.3)

- 1 1.c 2.b 3.a 4.c
 - 9. c 10. b 11. d
- 2 1. (\(\sigma\) 2. (\(\sigma\) 3. (\(\mathbf{x}\) 4. (\(\mathbf{x}\)) 5. (\(\sigma\) 6. (\(\sigma\) 7. (\(\mathbf{x}\)) 8. (\(\mathbf{x}\)) 9. (\(\mathbf{x}\))
- 3 Top predators
- 3. Top predators.
 - 1. pollution.
 3. overfishing
- 2. increase.
- 5. top predators.
- flooding
- 5. top predators.
- 1. Because they will not find enough food to eat.
 - Because sharks feed on different fish that depend on algae to get their food.
- They will pol ute water and marine organisms will be negatively affected.
 - The water in the lake decreases due to evaporation and may completely disappear.
 - The number of primary consumers increases, while the amount of producers and the number of tertiary consumers decrease.

- 7 1. grasses foxes 2. decreases.
 - 3. rabbits
- 4. grasses
- 🔞 1. algae.
- 2. butterflyfish.
- 3. hawk
- 9 1. producer
 - zooplankton triggerfish parrotfish
 - 3. primary
- 4. sea star

Exercises on Lesson 2

- 1 1.c 2.d 3.b 4.c
 - 5 d 6.d 7.c 9.a 10.c
- 2 1. (\(\sqrt{}\) 2. (\(\pi\) 3. (\(\pi\) 4. (\(\sqrt{}\)) 5. (\(\sqrt{}\)) 6. (\(\sqrt{}\)) 7. (\(\sqrt{}\)) 8. (\(\sqrt{}\))
 - 5. (√) b. (√) f. (9. (√)
- 3 1. Tertiary consumers.
 - Decomposers.
 - 3. Energy. 4. Population
 - 5. Population change.
 - 6. Seabirds.
 - 7. Microorganisms.
- 4 1. decrease increase
 - 2. photosynthesis producers
 - 3. population
- 4. decomposers
- 5 1. preys
- 2. primary
- 3. decomposers 4. energy
- increase.
- 6. microorganisms
- Because in the ecosystem, all species depend on other species to survive, so an increase or decrease in one species affects the population of other species.

- 7 1. The population of this species will decrease.
 - The microorganisms will move away to a cooler water and also fish that feed on microorganisms.
- 8 1. (*) 2. (*) 3. (√) 4. (√) 5. (√)
- 9 1, (*) 2, (\$\sqrt{}\$) 3, (\$\sqrt{}\$) 4, (*) 5, (*)

- 1 1. c 2. d 3. b 4. a 5. c 6. b 7. d 8. c 9. b 10. b 11. c
- 2 1. (√) 2. (≭) 3. (√) 4. (≭) 5. (√) 6. (≭) 7. (√) 8. (≭) 9. (√)
- 1, Coral bleaching.
 - 2. Microplastics.
 - 3. Coral reefs.
- 4 1, shelter.
- 2. overfishing.
- 3. extinction.
- 4. predator
- 5. toxic
- Because when the water temperature r.ses, the coral reefs get rid of algae from their tissues and turn completely into white causing coral bleaching.
 - Because plastics are toxic and sharp.

- 6 Plastic products get broken down into smaller pieces called microplastics.
- 7 1. (x) 2. (x) 3. (√)

Exercises on Lesson 4

- 11 1.d 2.b 3.c 4.a
- 2 1. (√) 2. (*) 3. (√) 4. (√) 5. (√)
- 1. Nursery.
 2. Habitat restoration.
- bleaching nursery grow up dving.
- Due to eroding of riverbanks.
- a b
- 7 c

Model Exam (1) on Concept (1.3)

- (A) 1. b 2. d 3. c 4. d (B) The number of primary
 - (B) The number of primary consumers increases, while the amount of producers and the number of tertiary consumers decrease.
- 2 (A) 1. () 2. (*) 3. () 4. (*)
 - (B) Because when the water temperature rises, the coral reefs get rid of algae from

their tissues and turn completely into white causing coral bleaching.

- 3 (A) 1. Nursery.
 - 2. Microplastics.
 - 3. Population.
 - 4. Water pollution.
 - (B) 1. white.
 - 2. primary

Model-Every (2) and Concept (1:3)

- 1 (A) 1. (*) 2. (*) 3. (\$\sqrt{}\$) 4. (\$\sqrt{}\$)
 - (B) Because in the ecosystem, all species depend on other species to survive, so an increase or decrease in one species affects the population of other species.
- 2 (A) 1, d 2, b 3, c 4, b
 - (B) They will get rid of algae that live in their tissues, then turn completely into white causing coral bleaching.
- (A) 1. microorganisms.
 - 2. primary consumers
 - 3. small fish
 - preys
 - (B) 1. Rabbit (all items are top predators, while rabbit is a primary consumer).
 - Insects (all items are producers, while insects are consumers).

Concept (1.1)

Exercises on Lesson 1

- 1 1. b 2. a 3. d 4.a 5. c 6. d
- 2 1. c 2. d 3. b
- 3 1. (✓) 2. (×) 3. (✓) 4. (✓) 5. (✓)
- 4 1. Matter. 2. Gas state.
- 1. solid gas 2. solid 3 solid gas 4. volume.
- 1. Wood (all items are liquids, while wood is solid).
 - 2. Vinegar (all items are solids, while vinegar is liquid).
 - 3. Coal (all items are gases, while coal is solid).
- Because it has mass and volume.
- 8 It changes from liquid state into gas state.
- 9 1. (✓) 2. (×)

 Exercises on Lesson 2
- 1 1.a 2.c 3.b 4.b 5.b 6.a 7.d 8.d 9.b 10.c 11.d
- 🔼 1. b 2. c 3. a

- 3 1. (\$\sqrt{}\$) 2. (\$\mathbf{x}\$) 3. (\$\mathbf{x}\$) 4. (\$\mathbf{x}\$) 5. (\$\mathbf{x}\$) 6. (\$\mathbf{x}\$) 7. (\$\sqrt{}\$) 8. (\$\mathbf{x}\$) 9. (\$\sqrt{}\$) 10. (\$\sqrt{}\$) 11. (\$\sqrt{}\$)
- 4 1. Solid state. 2. Liquid state. 3. Gases. 4 Gas state
 - 5. Measuring tape.
 - 6. Thermometer.
- 🛂 1. solid liquid 🛮 2. solid
 - 3. liquid gas 4. liquid.
 - 5. length 6. solid 7. particles 8. solid
 - 9. gas
- 1. Because it has definite shape
 and volume
 - 2. Because it is a solid matter
 - 3. Because it is a gas matter.
 - 4. Because it is a solid matter.
 - Because it has no definite shape and takes the shape of its container.
- 1. It will take the shape of each container.
 - 2. It will not change.
 - 3. It will have a definite shape
- **8** 1. (✓) 2. (✓) 3. (×) 4. (×)

Exercises on Lesson

1. d 2. b 3. a 4. b 5. a 6. a 7. c 8. d

- 2 1. (*) 2. (\$\sqrt{}\$) 3. (\$\sqrt{}\$) 4. (\$\sqrt{}\$) 5. (\$\sqrt{}\$) 6. (\$\sqrt{}\$) 7. (\$\sqrt{}\$) 8. (\$\sqrt{}\$) 9. (\$\sqrt{}\$)
- 1. high 2. normal 3. particles. 4. quickly.
- 1. Gas state.
 2. Electron microscope.
 3. Normal microscope
- 1. increase. 2. particles
 3. solid 4. solid gas
 5. liquid shape
- 1. To study them in an easier way.
 - To see each tiny particle as it is more powerful than normal microscope.
 - Because they are not held together.
 - Because particles of liquids can slide over each other.
- 1. It will increase.
 - 2. It will increase.
 - 3. It will increase.
- 8 1. solid 2. increase
- 9 1. (B) 2. (C) (A) (B) 3. (C).

Exercises on Lesson 4

- 11.b 2.a 3.c 4.a 5.b
- 2 1. (**x**) 2. (**x**) 3. (**√**) 4. (**√**) 5. (**√**) 6. (**√**)

- 3 1. Globe.
- 2. Model.
- 4 1. shape volume.
 - 2. solar 3. globe
 - 4. microscope
 - 5. volume shape.
- To see the shape and parts of germs without microscope.
- f It will be organized.
- 7 1. (1) 2. (2) 3. (3) 4. (3)

Exercises on Lesson

- 1 1.b 2.d 3.a 4.a
- 2 1. () 2. () 3. ()
- 3 1. liquid. 2. space 3. solid – gas. 4. particles. 5. containers.
- 4 Because it has no definite shape and definite volume.
- 5 It charges from liquid state to solid state.
- 6 1. (★) 2. (✔) 3. (★) 4. (★)

7

Solids	Liquids	Gases
- Iron.	- Juice.	- Oxygen.
- Their particles keep their shape and volume.	- Their particles slide over each other.	- Their particles move very free.

Model Exam (1) mr Sanespt (2-1)

- 1 (A) 1. solid 2. liquid. 3. particles 4. normal
 - (B) Because it has no definite shape and takes the shape of its containers
- (A) 1. (√) 2. (√) 3. (*) 4. (*)
 - (B) 1. Wood (all items are liquids, while wood is solid).
 - Vinegar (all items are solids, while vinegar is liquid).
- (A) 1. Measuring tape.
 - 2. Particle.
 - 3. Microscope. 4. Gas.
 - (B) 1. c
- 2. a

2 a

Model Exam (2) on Concept (2.1)

- 1 (A) 1. a 3. b
 - 3. b 4. a (B) it will increase.
- 2 (A) 1, solid
 - 2. liquid shape
 - 3. microscope
 - 4. solid
 - (B) Because it is a gas matter.
- (A) 1. Electron microscope.
 - 2. Model.
 - 3. Solid.
 - 4. Gas.
 - (B) 1. b 2. c

Concept (2.2)

Exercises on Lesson (1

- 1 1.a 2.a 3.d 4.d 5.b 6.b 7.b 8.d
- 2 1. temperature 2. Ruler 3. volume 4. Balance
- 3 1. (√) 2. (√) 3. (*) 4. (*) 5. (*) 6. (√) 7. (*)
- 4 1. Ceramic tiles.
 - 2. Strong stones. 3. Volume.
 - 4. Mass.
- 5. Length.
- 5 1. climate
- 2. solid liquid
- 3. mass
- 4. balance thermometer
- 5. length mass.
- 6. ceramic tiles rains
- 1. To protect the desert home from dust and dirt.
 - To protect the tropical rainforest home from animals getting inside.

3. B

4. A

- The rain will be collected on the top of cold weather homes.
- top of cold weather homes.

2. C

8 6

1. A

Exercises on Lesson

1 1. d 2. d 3. c 4. d 5. a 6. a

- 1. (**x**) 2. (**x**) 3. (**√**) 4. (**√**) 5. (**√**) 6. (**x**)
- 1. physical 2. color 3. odor 4. smaller
- Because both of salt and pepper have different colors.
- 1. Sugar and Pepper.
 - 2. Sugar and salt.
 - 3. Salt and Pepper.

Exercises on Lesson 3

- 1 1 d 2.b 3.c 4.b 5.a 6.b 7.d 8.a 9.c 10.b 11.d 12.c 13 a 14.b 15.a
- 2 1. (**x**) 2. (**x**) 3 (**x**) 4. (√) 5. (√) 6. (√) 7. (√) 8. (**x**)
 - 9. (\checkmark) 10. (\checkmark) 11. (\checkmark) 12. (\checkmark)
- 1. Physical properties.
 2. Chemical properties.
 - 3. Volume. 4. Mass.
 - 5. Temperature.
- 1. Physical 2. chemical
 - 3. temperature 4. rough
 - 5. doesn't attract floats
 - 6. sinks attracted
 - 7. volume
 - 8. one thousand 9. mass
 - 10. iron cotton.
- 1. Because rusting of iron is a change that happens to iron when it interacts with air and water.

- Because quickly moving particles produce more thermal energy which cause increasing in temperature.
- 1. The paper becomes ash.
 - The temperature of the matter will decrease.
 - The iron nail will attract to the magnet, while the plastic spoon will not attract to the magnet.
 - The piece of cork will float on the surface of water.
- 7 1. P 2. C 3. P 4. P 5. C 6. P 7. P
- 8 1, B 2, A 3, A 4, B
- 1, larger 2, smal er 3, mass.

- 1 1. a 2. d 3. b 4. c 5. a 6. b 7. c 8. d 9. d
- 2 1. e → B 2. d → D 3. b → E 4. a → C 5. c → A
- 3 1, (\$\sqrt{}\$) 2. (\$\mathbf{x}\$) 3. (\$\mathbf{x}\$) 4. (\$\sqrt{}\$) 5. (\$\sqrt{}\$) 6. (\$\mathbf{x}\$) 7. (\$\sqrt{}\$) 8. (\$\mathbf{x}\$)
- 4 1. Conduction. 2. Helium gas. 3. Rubber.
- 1. chemical 2. heilum air.
 - flammable poisonous
 physical

- 5. heat electricity.
- 6. steel hard strong.
- 7. rubber
- 8. smooth transparent.
- 9. copper wood
- 6 1. Because helium is lighter than
 - Because helium is not flammable or poisonous.
 - Because wood and plastic are bad conductors of heat.
- 7 1. The blimp will rise up in the air.
 - 2. It will not conduct electricity.
- 8 1. Copper.
- 2. Helium
- 3. Rubber
- 4. Steel.
- 5. Glass.

Model Emin (1) on Concept (2-2)

- 1 (A) 1. b 2. a 3. c 4. a
 - (B) Because helium is not flammable or poisonous.
- (A) 1. (★) 2. (√) 3. (★) 4. (√)
 - (B) The iron nail will attract to the magnet, while the plastic spoon will not attract to the magnet.
- (A) 1. c 2. a 3. d 4. b (B) 1. Rubber. 2. Steel,

Model Evans Shan Come and 2 of

- 1 (A) 1. (¥) 2. (¥) 3 (√) 4. (√)
 - (B) To protect the tropical rainforest home from animals getting inside.

- 🔼 (A) 1. chemical
 - 2. temperature
 - 3. climate 4. mass
 - (B) The temperature of the matter will decrease.
- (A) 1. Physical properties
 - Mass.Helium.
 - 4. Conduction.
 - (B) 2

Cancept (2.3)

- 1 1.b 2.d 3.d 4.b 5.b 6.c 7.c 8.a
 - 9. d 10. c
- 2 1. (x) 2. (\sqrt{)} 3. (x) 4. (\sqrt{)} 5. (x) 6. (x) 7. (\sqrt{)}
- 1. increasing 2. solid liquid
 - 3. thermal energy.
 - close together.
 increase.
 melting
 melts
 - 6. melting 8. melt.
- 9. increase
- 10. thermal
- 1. Because the temperature of ice increases, so it will melt and becomes liquid water.
 - Because the particles of water move faster, vibrate and spin around faster.
- 5 1. Ice cubes will melt and become liquid water.
 - The particles of water will move faster.

- 6 1.1 2.3 3.2 4.1-3
- 7 1. (\(\sigma\) 2. (\(\mathbf{x}\) 3. (\(\mathbf{x}\) 4. (\(\sigma\))

Exercises on Lesson (2)

- 1 1. b 2. a 3. c 4. c 5. d 6. d 7. c 8. b 9. b 10. d 11. c 12. b 13. a 14. c
- 7 1.c 2.a 3.e 4.d
- 3 1. (x) 2. (√) 3. (√) 4. (√) 5. (√) 6. (x) 7. (√) 8. (√) 9. (x) 10. (x) 11. (x)
- 4 1. thermal energy 2. reverse 3. physical 4. water.
- 1. Physical changes.
 2. Melting process.
 - 3. Freezing process.
 - 4. Liquid state.
- 1. temperature. 2. melting
 3. freezing 4. temperature
 5. thermal 6. increase
 7. decrease 8. gas
 - melting evaporationsolid.
- 1. Because ice cubes will gain thermal energy, so it changes to liquid water.
 - Because in these processes the matter changes without any change in its structure.

- Because water vapor loses thermal energy to the cold surface, so the particles of water vapor move slower and get close together forming water drops.
- The particles of water release thermal energy and they move slower and get close together forming solid ice.
 - The particles of water gain more thermal energy and they move faster and spread more forming water vapor.
- 9 1, B-A-C 2. A-B-D

- 1 1.b 2.b 3.b 4.a 5 d 6.a 7.d 8.a 9.c 10.d
- 2 1. (x) 2. (x) 3. (\sqrt{)} 4. (x) 5. (x) 6. (x) 7. (x) 8. (x) 9. (\sqrt{)} 10. (x) 11. (\sqrt{)} 12. (x)
- 3 1. filtration. 2. dissolves. 3. gas. 4. the same.
- 4 1. Compound. 2. Mixture.
- 5 1. compound 2. compound 3. color 4. mass properties
 - 5 changed. 6. solid liquid 7. filtration 8. evaporation

- 1. Because they are formed of two or more materials that don't combine chemically with each other
 - 2 Because the soil does not dissolve in water
 - 3. Because mixing baking soda with vinegar produces gas causing bubbles which means that the properties of the substances are changed.
- The water will evaporate leaving the salt in the container.
 - The mass and properties sugar will not change.
- 8 1. (×)
- $2.(\checkmark)$
- 3. (*)

- 9 1. Solid
- 2. Gas
- 3. Liquid
- 4. Solid and liquid
- 10 1. 5 gm
- 2. 10 gm
- changed into new color.
- 4 C

Exercises on Lesson 4

- 1. d 2. a
 - 3. a
 - 5. b 6. d 9. d 10. b
- 7. c 8. b 11. c 12. d
- 1, b
- 2. d
- 3. a 4. c

4. b

- 4. (X) 1. (X) 2. (✓) 3. (✓) 8. (x)
 - 5. (X) 6. (\checkmark) 7. (*)
 - 9. (<) 10. (<)

- 4 1. physical chemical.
 - oxygen chemical
 - chemical.
 - 4. physical chemical
 - physical
 - substance properties
 - chemical physical
 - chemical physical
 - 9. chemical
- 1. Because the taste of the bread is not like its ingredients which means that a new substance is formed
 - Because when iron reacts. with oxygen and water, it rusts (form a chemical substance called iron oxide).
 - 3. Due to the chemical change that happens to the milk.
 - 4. Because maxing fruit salad don't form new substance.
- 1. A new substance is formed. and its color is dark blue.
 - They release heat that can start a fire.
 - 3. The piece of metal will lose it's shining.
- Because mixing vinegar with baking soda produces gas bubbles which cause inflating of the balloon.
- 1. Chemical change.
 - oxygen water rusting.
- 1. The ice cube will melt and changing into water.

- Physical change, because it is the change of the state of water without any change in its structure.
- 10 1. Chemical change.
 - In figure (2), Because folded paper is a change in the shape of paper without any change in its structure. So, we can reverse it easly.

Exercises on Lesson 5

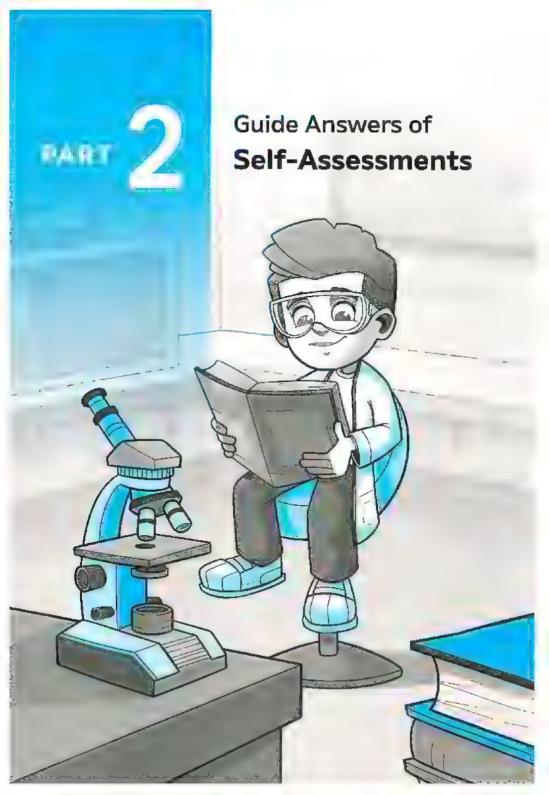
- 1 1.d 2.b 3.d 4.a
- 2 1. (\$\sqrt{}\$) 2. (\$\mathbf{k}\$) 3. (\$\mathbf{k}\$) 4. (\$\mathbf{k}\$) 5. (\$\mathbf{k}\$) 6. (\$\sqrt{}\$) 7. (\$\mathbf{k}\$)
- 1. Desalination process.
 - 2. Filtration process.
 - 3. Evaporation process.
- 1. energy expensive
 2. salt marine
 - 3. fresh oceans seas.
 - 4. filtration
- Because it is a mixture of water, salt, other minerals, gases, living organisms and dead organisms.
- 6 Water vapor rises up leaving salts and other minerals.
- 7 1.1 2.4 3.2 4.3

Manual Example on Congret (2-3)

- (A) 1. temperature.
 - 2. compounds
- 3. new
- 4. chemical
- (B) Because in these processes the matter changes without any change in its structure.
- 2 (A) 1. a 2. d 3. b 4. a
 - (B) The mass and properties of sugar don't change.
- 3 (A) 1. (✓) 2 (※) 3. (※) 4. (✓)
 - (B) 1. Compound.
 - 2. Desalination process.

Manual (Seam (2) and Solivary (2.3)

- 1 (A) 1. b 2. d 3. a 4. c
 - (B) Because when iron reacts with oxygen and water it rusts (form a chemical reddish color substance called iron oxide).
- 2 (A) 1. (*) 2. (\$\sqrt{}\$) 3. (\$\sqrt{}\$) 4. (*)
 - (B) The water will evaporate leaving the sait in the container.
- 3 (A) 1. Melting process.
 - 2. Mixture.
 - 3. Filtration process.
 - 4. physical changes.
 - (B) 1. The ice cube will melt and changes into water.
 - Physical change, because it is the change of the state of water without any change in its structure.



UNIT ONE: Interactions of Organisms

Concept (f. l)

Self-Assessment 1

- 1 (A) 1. a 2. c 3. d
 - (B) Because plants make their own food in their leaves during photosynthesis process.
- 2 (A) 1. (✓) 2. (✗) 3. (✓)
 (B) The plant can't make photosynthesis process, so it
- 3 1. leaves. 2. stem roots 3. carbon dioxide

will die

Self-Assessment 2

- 1 (A) 1. (★) 2. (★) 3. (✓)
 - (B) Because it carries water and nutrients from the roots to the leaves.
- (A) 1. Roots.
 - Carbon dioxide gas.
 - 3. Germination.
 - (B) The seeds will germinate and make sprouts and begin to grow.
- 3 1. b 2. d 3. a

Self-Assessment 3

(A) 1. Chlorophyll 2. root hairs 3. photosynthesis

- (B) The color of leaves will be turned into the same color of water in the cup.
- 2 (A) 1. roots 2. soil. 3. stem
 - (B) To transport the food materials from the leaves to the other parts of the plant.
- 1. stomata. 2. oxygen gas 3. xylem.

Self-Assessment 4

- 1 (A) 1. a 2. b 3. c
 - (B) Because during photosynthesis process, plants produce oxygen gas which is important for all living organisms to breathe.
- 2 (A) 1. (✓) 2. (✓) 3. (※)
 - (B) The plants can't absorb more water and nutrients from the soil.
- 3 1. veins nutrients
 - 2. sugar phloem.
 - 3. xylem.
 - 4. arteries oxygen

Self-Assessment

- 1 (A) 1. (**x**) 2. (√) 3. (√)
 - (B) Because they increase the amount of absorbed water and nutrients from the soil.

- (A) 1. Human circulatory system. 2. Seed dispersal.
 - 3. Plant reproduction.
 - (B) Plant's leaves will be pale green or yellow.
- 3 1. wind light seeds.

Model Even on Consept (1)

- (A) 1. water nutrients roots.
 - 2. veins blood capillaries.
 - 3. wood
 - 4. xylem phloem.
 - (B) Because it transports water and nutrients from the roots to the leaves.
- (A) 1. b 2. d 3. a 4. c
 - (B) The plant can't produce seeds that help it to reproduce.
- (A) 1. (✓) 2. (×) 3. (×) 4. (✓) (B) 1. Chlorophyll.
 - 2. Glucose sugar.

Concept (1.2)

Self-Assessment 6

- 1 (A) 1. (★) 2. (✔) 3. (★)
 - (B) Because different animals eat plants or other animals or both of them to get energy.
- 2 (A) 1. the Sun.
 - 2. ecosystem.
 - 3. energy.

- (B) It will decompose and its nutrients are returned to the soil.
- 3 1. b 2. d 3. a

Self-Assessment 7

- 1 (A) 1. b 2. d 3. c
 - (B) Because producers use the light energy of the Sun to make their own food through photosynthesis process.
- (A) 1. Nonliving things. (All items are living organisms, except nonliving things).
 - Consumers. (All items are related to photosynthesis except consumers).
 - Snakes. (All items are decomposers, while snakes are consumers).
 - (B) 1. plant it makes its own food.
 - bird it eats grasshopper which is a primary consumer.
- Producers: photosynthesis.
 Consumers: living organisms.
 Decomposers: decomposition.

Self-Assessment 8

- (A) 1, b 2. d 3. c
 - (B) Because the living organism that eats plants is considered as a primary consumer.

- (A) 1. Rabbits (all items are predators, while rabbits are primary consumers).
 - Plants (all items are decomposers, while plants are producers).
 - Bacteria (all items are primary consumers, while bacteria are decomposers).
 - (B) Grasses → Deer → Lion. - Grasses → Deer → Alligator.
- 3 1. d 2. c 3. b 4. d

Self-Assessment 9

- 1 (A) 1. (✓) 2. (✓) 3. (×)
 - (B) Because they can be carried away by air to other places.
- 2 (A) 1. a 2. b 3. c
 - (B) All living organisms in this ecosystem will move away to another healthy ecosystem or they will die.
- 3 Figure (B),

Mode (≥ ani o) For opi (24) 8 (4(2))

- 1 (A) 1. d 2. c 3. c 4. b
 - (B) The secondary consumers will move away to another place to search for food, or they will die.
- 2 (A) 1. (★) 2. (✓) 3. (★) 4. (✓) (B) c

- (A) 1. Carbon dioxide gas.
 - 2. Root hairs.
 - 3. Decomposers.
 - 4. Flowers.
 - (B) 1. d
- 2. c

Concept (1.8)

Self-Assessment 10

- (A) 1. Sea stars (all items are producers, while sea stars are primary consumers).
 - Algae (all items are primary consumers, while algae are producers).
 - Snakes (all items are top predators, while snakes are secondary consumers).
 - (B) Because all food chains begin with producers that depend on sunlight to make their own food.
 - (A) 1. c 2. d 3. d
 - (B) 1. Producers, 2. Clam.
 - 3. Secondary consumer.
 - 4. Tertiary
- 🛐 Grasses --> Deer --> Lion

Self-Assessment (11

- (A) 1. Decomposers (all items are types of consumers except decomposers).
 - Clam (all items live on land, while clam lives in water).

- Tiger (all items can form a marine food chain, while tiger doesn't share in this food chain).
- (B) Because predators feed on other consumers, which previously fed on plants or animals.
- (A) 1, primary consumer
 2, producers 3, sunlight
 - (B) The number of microorganisms on which small fish feed on will increase
- **3** 1. (**x**) 2. (**√**) 3. (**x**) 4. (**√**)

Self-Assessment 12

- (A) 1. coral bleaching 2. plastic 3. producers.
 - (B) They will get rid of algae that live in their tissues, then turn completely into white causing coral bleaching.
- (A) 1. toxic and sharp 2. white.
 3. real food
 - (B) Because plastic products are toxic and sharp that harm marine organisms.
- Algae → Zooplankton → Corals → Parrotfish → Shark.

Self-Assessment 13

- 1 (A) 1. (✓) 2. (✓) 3. (≭)
 - (B) The number of this animal species decreases gradually and may extinct.

- 2 (A) 1. d 2. c 3. a
 - (B) Because it decreases the amount of producers which consumers feed on, and also causes flooding due to riverbanks eroding.
- 1. Zero plastics
 - 2. Habitat restoration
 - 3. nurserv.

Minus Examendation (4)

- (A) 1. d 2. b 3. b 4. a
 - (B) Because green plants absorb sunlight during photosynthesis process to make their own food and produce oxygen gas that all other living organisms need for breathing.
 - (A) 1. Producers.
 - 2. Chlorophyll.
 - 3. Decomposers.
 - 4. Population.
 - (B) Small fish don't find their food because microorganisms move to another place where the water is cooler.
 - (A) 1. consumers
 - 2. wind. 3. preys
 - top predators.
 - (B) Microorganisms → Small fish > Seabirds.

Assess Your Learning on Firming (1)

1 1.c 2.b 3.b 4.a 5.d 6.b

- 1

The plant in the light	The plant in the dark
- Its leaves are	- Its leaves are
dark green color.	yellow color or
- It can make	pale green color.
its own food,	- it can't make
because it	its own food,
can make	because it
photosynthesis	can't make
process.	photosynthesis
	process.

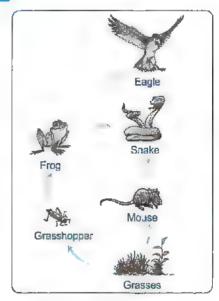
2 Look at the Assessment Book on page (58).

3.

The producer organisms	The consumer organisms
They are	They are
organisms that can	organisms that
make their own	eat other living
food and don't feed	organisms to
on other plants or	get their energy,
animals.	because they
	cannot make their
	own food.

3 1. (√) 2. (*) 3. (*) 4. (*) 5. (√) 6. (*)

- **5** 1.



- 2. Grasses : producers.
 - Mouse and grasshopper : primary consumers
 - Snake and frog : secondary consumers.
 - Hawk : tertiary consumer.

Company (2.1)

Self-Assessment 14

- 1 (A) 1. solid 2. solid 3. gas
 - (B) It becomes a gas.
- (A) 1. (*) 2. (*) 3. (*)
 - (B) Because it has mass and volume.

3

Solida	Liquids	Gases
Sugar	Mılk	Carbon dioxide
Stone	Blood	Oxygen
Coal	Oil	Water vapor

Self-Assessment (15)

- (A) 1. Glass (all items are gases, while glass is solid).
 - 2. Air (all items are solids, while air is gas).
 - Coin (all items are liquids, while coin is solid).
 - (B) Because it has no definite shape and it has definite volume.
- (A) 1. gas 2. mass 3. scale.
 - (B) It will have no definite shape.
- 1. (A) \rightarrow (B) \rightarrow (C). 2. (C) \rightarrow (B) \rightarrow (A).

Self-Assessment 16

- (A) 1. particles.
 2. microscope. 3. solids.
 - (B) To see each tiny particle as it is more powerful than normal microscope.
- 2 (A) 1. liquid 2. gas 3. definite
 - (B) The particles of balloon come close together, so the balloon becomes smaller.

Self-Assessment (17)

- 1 (A) 1. (✓) 2. (×) 3. (×)
 - (B) Because it has mass and volume.
- (A) 1 solids 2. energy. 3. similar to
 - (B) It will take the shape of their containers.

3

Regular pattern	Random arrangement
Wood	Water
Plastic	Oxygen
	Oil
	Carbon dioxide

Self-Assessment (18)

- 1 (A) 1. (✓) 2. (×) 3. (✓)
 (B) Because it is a gas.
- (A) 1. volume. 2. solids 3. solids (B) It will increase.
- 3 1. solid 2. liquid 3. gas

Model Equition Consent (2.1)

- (A) 1. particles. 2. solar 3. solid 4. liquid
 - (B) Because it has definite shape and volume.
- (A) 1. c 2. b 3. c 4. a (B) It will be organized.
- 3 (A) 1. (✓) 2. (※) 3. (※) 4. (※)
 - (B) 1. Coal (all items are gases, while coal is solid).
 - Wood (all items are liquids, while wood is solid).

Concept (2.2)

Self-Assessment 19

- (A) 1. slanted 2. climate.
 3 thermometer.
 - (B) Because roofs of cold weather homes are made of ceramic tiles and they are slanted.

- 2 (A) 1. (≭) 2. (√) 3. (√)
 - (B) 1. Balance.
 - 2. Measuring cup.
- 3 1. 2 rains. 2. 1 dust dirt. 3. 3 - animals getting inside.

Self-Assessment 20

- 1 (A) 1. d 2. a 3. d
 - (B) Becuase each of salt and sugar have the same white color.
- 2 (A) 1. balance. 2. cold weather 3. shape
 - (B) Taste and smell.
 - 3 1. B 2. A 3. C

Self-Assessment 21

- 1 (A) 1. c 2. a 3. d
 - (B) Because mass of matter is changed by changing its size.
- Z (A) 1. (x)
 Z. (√)
 3. (x)
 (B) It doesn't attract to the magnet.
- 3 1. material (A). 2, material (B). 3. balance.

Self-Assessment 22

- 1 (A) 1. d 2. b 3. a
 - (B) Because glass is transparent and smooth.

- (A) 1. Rusting (all items are physical properties of matter, while rusting is a chemical property of matter).
 - Kilogram (all items are measuring units of volume, while kilogram is a measuring unit of mass).
 - Iron nail (all items are not attracted to the magnet, while iron nail is attracted to the magnet).
 - (B) The piece of cork will float on the surface of water.
- 3 1. B hard strong.
 - 2. C waterproof flexible.
 - 3. A transparent smooth.

Model Examon Concepts (2.1) & (2.2)

- 1 (A) 1. increases. 2. mass 3. microscope 4. rubber
 - (B) Because rusting of iron is a change which happens in iron when it interacts with water and air.
- **2** (A) 1. (✓) 2. (★) 3. (★) 4. (✓)
 - (B) It will have definite shape.
- (B) 1. B 2. A 4. c

Control (2.1)

Self-Assessment 23

- (A) 1. mass 2. melting
 - (B) Because thermal energy is used in many things every day such as cooking food and warming homes.
- (A) 1. water. 2. heating. 3. faster.
 - (B) They will melt and change into liquid water.
- 3 1. B 2. A 3. C

Self-Assessment (24)

- 1 (A) 1, heating.
 - 2. thermal
 - 3. condensation
 - (B) Because when decreasing the temperature of water, its particles lose energy and move slower, so water changes into ice.
- (A) 1. condensation 2. away from
 - 3. water vapor.
 - (B) The distance between particles of water vapor will decrease and changes into liquid water.

- 1. Ice.
- 2 Water
- 3. Water vapor. 4. Melting.
- 5. Freezing
- Evaporation
- 7 Condensation

Self-Assessment 25

- - (A) 1, temperature
 - 2 filtration
 - mass properties
 - (B) Because each material in a mixture keeps its properties without any change.
- (A) 1, faster. 2 solid 3 mixture
 - (B) The mass of apple pieces remains as it is without any change.
- 1, 20
- 2 30
- 3 30
- 4. remain as it is.

Self-Assessment 26

- (A) 1, c
- 2. c
- 3. d.
- (B) Because coloring a paper is a change in matter without any change in its structure.
- 2 (A) 1. gas compound 3. chemical
 - (B) Iron wire will rust.
- Evaporation process.
 - Condensation process.
 - 3. Physical change
 - 4. Salt only.

Self-Assessment 27

- 1 (A) 1. c 2 h 3 4
 - (B) Because it consists of water. salt, other minerals, cases. living organisms and dead organisms.
- 2 (A) 1. (×) 2. (1) 3. (1)
 - (B) The particle of ice will move faster and changes into liquid water
- 1.1 42 3-2 Physical change.

Model Example Trustee

- (A) 1, d 2. h 3 6
 - (B) To examine one tiny particle such as a blood cell.
- (A) 1, rough physical 3. solid 4. ceramic tiles
 - (B) It will melt and changes into liquid water.
- (A) 1, b 2 c 3. a
 - (B) 1. solid 2. increase

Assess Your Searning on Theme (2)

- 1 d 2. c 3. d 4. b 5. d
- 7. d 6. a 8. c 9. a 10. b

Monthly Tests

October Tests

Model (i

- 1 (A) 1. (*) 2. (\$\sqrt{}\$) 3. (*) 4. (*)
 - (B) Because it feeds on primary consumers that feed on plants.
- 2 (A) 1. c 2. c 3. b 4. a
 - (B) Grass → Grasshopper → Frog → Snake → Owl.
- (A) 1. Decomposers.
 - 2. Stomata.
 - 3. Carbon dioxide gas.
 - 4. (Stem) Xylem.
 - (B) Grasses. (all items are consumers except grasses are producers).

Model 2

- 1 (A) 1. a 2. b 3. c 4. d
 - (B) Grass → Deer → Lion → Decomposer.
- 2 (A) 1. (★) 2. (★) 3. (★) 4. (✓) (B) Seeds can grow (germinate).
- 3 (A) 1. C c 2. A d 3. B - a 4. D - b
 - (B) Because it transports the produced glucose sugar from leaves to all other parts of the plant to grow.

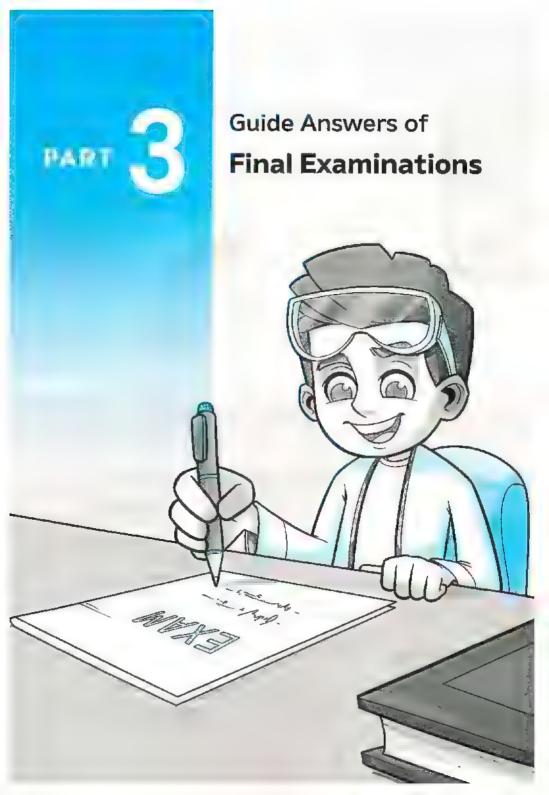
November Tesis

Model 1

- (A) 1. bleaching nursery.
 - 2. solid state gas state.
 - 3. smal fish microorganisms
 - 4. solid gas
 - (B) Because particles of liquids can slide over each other.
- 2 (A) 1. (✓) 2. (✓) 3 (✓) 4. (≭)
 - (B) Light. (all items are considered matter while light is an energy).
- (A) 1, Nursery.
 - 2. Coral bleaching.
 - Measuring tape.
 - 4. Matter.
 - (B) The ecosystem may be destroyed.

Model 2

- (A) 1. b 2. c 3. b 4. a
 - (B) It will increase.
- (A) 1. Habitat restoration.
 - 2. Water pollution. 3. Model.
 - 4. Normal microscope.
 - (B) Because sharks feed on different fish that depend on algae to get their food.
- (A) 1. solid gas.
 - 2. turtles plastic
 - 3. shape volume.
 - 4. increase decrease
 - (B) 1, food web. 2, mouse



Model Examinations

El-Moasser Final Examination Models

Model Exam 1

- 1 (A) 1. c 2. c 3. b 4. c
 - (B) To protect the desert home from dust and dirt.
- 2 (A) 1. (✓) 2. (×) 3. (✓) 4. (×)
 - (B) It can't make photosynthesis process and it will die.
- (A) 1. pollution.
 - 2. consumers decomposers
 - 3. stomata
 - 4. physical chemical
 - (B) 1. Wood. (all items are liquids, while wood is solid).
 - Sunlight (all Items are parts of the plant, while sunlight is an energy).

Model Exam 2

- 1 (A) 1. melts
 - 2. chemical
 - 3. steel hard
 - 4. balance thermometer
 - (B) The speed of particles will increase.
- (A) 1. Population. 2. Prey.
 - 3. Water.
 - 4. Plant's root.
 - (B) To get his needed energy to do his activities.

(A) 1. c 2. a 3. e 4. d (B) 1, white. 2. wood

Model Exam 3

- 1 (A) 1. (x) 2. (x) 3. (√) 4. (x)
 - (B) The magnet attracts the iron nail but it doesn't attract the plastic spoon.
- 2 (A) 1. shelter. 2. overfishing. 3. predator 4. toxic (B) 1. leaves 2. roots
- (A) 1. Melting process.
 - 2. Volume. 3. Globe.
 - 4. Tertiary consumers.
 - (B) Because the temperature of ice Increases so, it will melt and becomes liquid.

Model Exam 4

- (A) 1. Plant' reproduction.
 - 2. Producers.
 - 3. Seabirds.
 - 4. Solid state.
 - (B) Because helium is lighter than air.
- 2 (A) 1. () 2. (×) 3. (×) 4. (√)
 - (B) Water and nutrients will not move up from the roots to the leaves.

3 (A) 1. b 2. c 3. b 4. a (B) 1. (★) 2. (✓) 3. (★) 4. (★)

Model Exam 5

- 1 (A) 1. b 2. b 3. b 4. c (B) 1. (✓) 2. (✓) 3. (※) 4. (※)
- (A) 1. ecosystem.
 - 2. hot cold
 - 3. flammable poisonous
 - 4. stomata
 - (B) Because by increasing temperature, it will gain thermal energy and changed into liquid water.
- (A) 1. Physical changes.
 - 2. Evaporation process.
 - 3. Measuring tape.
 - 4. Top predators.
 - (B) The plant can't absorb the energy of sunlight, so it can't make photosynthesis process.

Model Exam 6

- (A) 1. sugar leaves
 - 2. carbon dioxide gas water
 - 3. decomposers primary consumers
 - 4. liquid shape
 - (B) To protect this home from animals getting inside.

- 2 (A) 1. c 2. a 3. c 4. c
 - (B) 1. c 2. d 3. a
- 3 (A) 1. (✓) 2. (✓) 3. (×) 4. (✓)
 - (B) The microorganisms will move to a cooler water.

Model Exam 7

- (A) 1. Overfishing.
 - 2. Oxygen gas.
 - 3. Plant transport system.
 - 4. Temperature.
 - (B) The temperature of the matter will decrease.
- 2 (A) 1. (\(\sigma\) 2. (\(\sigma\) 3 (\(\mathbf{x}\)) 4. (\(\mathbf{x}\))
 - (B) Because it absorbs the energy of sunlight that helps the plant to make photosynthesis process.
- 3 (A) 1. d 2. c 3. d 4. b
 - **(B)** 1. **(B)**
 - 2. (C) (A) (B)
 - 3. (C)

Model Exam 8

- 1 (A) 1. (\(\sigma\) 2. (\(\sigma\) 3. (\(\sigma\) 4. (\(\sigma\)
 - (B) Because it is not flammable and not poisonous.

- 2 (A) 1, c 2, b 3, b 4, a
 - (B) The speed of particles will increase.
- (A) 1. liquid 2, space 3. solid gas. 4. particles.
 - (B) 1. c
- 2. a

Model Exam 9

- 1 (A) 1. a 2. d 3. b 4. c
 - (B) The water of the lake decreases due to evaporation and may completely disappear.
- 2 (A) 1, physical 2, odor 3, rough 4, chemical
 - (B) Because in these processes the matter changes without any change in its structure.

- 3 (A) 1. (★) 2. (√) 3. (√) 4. (√)
 - (B) 1. solid
- 2. increase

Model Exam 10

- 1 (A) 1. (√) 2. (≭) 3. (≭) 4. (≭)
 - (B) 1. plants
 - 2. Carbon dioxide.
- [2] (A) 1. Electron microscope.
 - 2. Liquid state.
 - 3. Photosynthesis process.
 - 4. Flowers.
 - (B) Because it is a solid matter.
- (A) 1. d 2. c 3. a 4. b (B) 1. (1) 2. (2)

Final Examinations of Some Governorates

Cairo Governorate

1 Leaders Language School

- 1 (A) 1. (✓) 2. (※) 3. (✓) 4. (※)
 - (B) Oxygen. (all items are solids, while oxygen is a gas).
- 2 (A) 1. Oxygen 2. Consumers 3. decomposers.
 - (B) The plant can't absorb the energy from sunlight and can't make photosynthesis process.
- (A) 1. a 2. b 3. c 4. b
 (B) Grass → Rabbit → Snake
 → Hawk.

2 Science Inspectorate

- 1 (A) 1. b 2. a 3. c 4. c
 - (B) b. Maple seeds, because they are light seeds.
- (A) 1. b 2. d 3. c 4. a
 (B) Because it transports the produced glucose sugar from the leaves to all other parts of the plant to grow.
- 3 (A) 1. (✓) 2. (✓) 3. (✗) 4. (✗)
 - (B) The ecosystem may be destroyed.

3 Hadayek El Kobba Edu. Zone

- 1 (A) 1. Freezing.
 - 2. Plant transport system.
 - 3. Decomposers.
 - 4. Liquid state.
 - (B) Because it has no definite shape but it has definite volume.
- 2 (A) 1. c 2. c 3. b 4. b
 - (B) Gases can't move into or out of the plant's leaves and the plant will die.
- 3 (A) 1. (✓) 2. (≭) 3. (≭) 4. (✓)
 - (B) The force will increase and particles become closer to each other so, spaces between particles will decrease.

4 Science Inspectorate

- 1 (A) 1. b 2. b 3. b 4. c
 - (B) Because it has mass and volume.
- 2 (A) 1. chemical
 - 2. evaporation
 - 3. Freezing
 - 4. Decomposers
 - (B) Grass → Rat → Snake → Hawk.

- 3 (A) 1. (*) 2. (x) 3. (1) 4. (x)
 - (B) Plant's leaves will be vellow and can't make photosynthesis process.

Giza Governorate

The Egyptian Inter. School

- (A) 1. b 3 d 2. C 4 8 (B) Nursery.
- (A) 1, light chemical coral bleaching. compound.
 - 4. physical chemical
 - (B) To protect the desert home from dust and dirt
- 3 (A) 1. (×) 2. (1) 4. (x) 3. (1)
 - (B) The temperature of the matter will decrease.

Awssem Educational Zone

- (A) 1. c 2 0 3. a
 - (B) Microorganisms → Small fish → Seabird.
- 2 (A) 1. (X) $2.(\checkmark)$ 3. (1) 4. (1)
 - (B) Because plants make their own food in their leaves during photosynthesis process.

- (A) 1 Model 2. producers. 3. carbon dioxide

 - 4 chemical
 - (B) Secondary consumers.

Alexandria Governorate

East Educational Zone

- (A) 1. a 2 h 3. b
 - (B) Because it feeds on primary consumers that feed on plants.
- (A) 1, chemical 2 arteries 3 water 4. chlorophyll
 - (B) Stomata.
- 2. (x) (A) 1. (V) 3. (1) 4. (×)
 - (B) The particles of the solid matter will move, vibrate and spin around faster.

Science Inspectorate

- 1 (A) 1. c · 2. c 3 b
 - (B) Grass. (all items are consumers while grass are producers).
- (A) 1. Phloem Model 3. fungi. 4. particles.
 - (B) To get his needed energy to do his activities.
- 3 (A) 1. (√) 2. (*) 4. (x) 3, (*)
 - (B) Grass → Grasshopper → Frog → Snake → Owl.

Menoufia Governorate

9 Shebeen El-Koum Edu. Zone

- (A) 1, Phloem 2, chemical
 - Reproduction 4. Gram
 - (B) Grass → Deer → Lion → Decomposer.
- 2 (A) 1. (✓) 2. (≭) 3. (✓) 4. (≭)
 - (B) Due to water become very warm, so coral reefs will get rid of the algae living in their tissues.
- 3 (A) 1. d 2. a 3. b 4. c
 - (B) It will break down into smaller pieces called microplastics.

El-Gharbia Governorate

10 Science Inspectorate

- (A) 1. steel hard
 - 2. oxygen nutrients
 - decomposers decaying or dead organisms.
 - 4. physical chemical
 - (B) They can find food easily, as they feed on small fish which feed on microorganisms that live in cold water.
- 2 (A) 1, Tape measure.
 - 2. Carbon dioxide gas.
 - 3. Population.
 - 4. Xylem (Stem).

- (B) Because when the water vapor hits cooler air, it condenses into tiny droplets which looks like small white clouds that are visible.
- 3 (A) 1. (★) 2. (★) 3. (✔) 4. (★)
 - (B) 1. Sea star.
 - Primary consumers on marine food web.

Kafr El-Shelkh Governorate

11 Science Inspectorate

- 1 (A) 1. c 2. b 3. b 4. c
 - (B) Coral bleaching.
- 2 (A) 1. (*) 2. (*) 3. (**√**) 4. (*)
 - (B) Because it is formed of some gases.
- (A) 1. copper rubber.
 - 2. liquid
- 3. gas
- (B) The water will evaporate leaving the salt in the container.

Beheira Governorate

12 Science Inspectorate

- 1 (A) 1. c 2. b 3. b 4. a
 - (B) Because decomposers return nutrients of dead organisms back to the soil.

- (A) 1. Coral bleaching.
 - 2. Ceramic tiles.
 - 3. Conduction.
 - 4. Predator.
 - (B) The plant can't produce seeds that help it to reproduce.
- 3 (A) 1. (✓) 2. (✗) 3. (✗) 4. (✓)
 - (B) Grass → Rabbit → Snake → Hawk

Fayoum Governorate

- 13 Science Inspectorate
- 1 (A) 1. c 2. c 3. a 4. d
 - (B) It transports water and nutrients from the roots to the rest of the plant through xviem.
 - It supports leaves and flowers of the plant.
- 2 (A) 1. (\checkmark) 2. (\checkmark) 3. (*) 4. (\checkmark)

The producer organisms	The consumer organisms
- They are	- They are
organisms that	organisms that
can make their	eat other living
own food and	organisms to
don't feed on	get their energy,
other plants or	because they
animals.	cannot make their
	own food.
Example : Plants.	Example : Birds.

- 🛐 (A) 1. b 2. a 3. d 4. c
 - (B) 1. food web.
 - 2. mouse frog.

Asslut Governorate

- 14 Science Inspectorate
- (A) 1. a 2. c 3. b 4. a
 - (B) Because helium is lighter than air.
- 2 (A) 1. (*) 2. (*) 3. (\$\sqrt{}\$) 4. (\$\sqrt{}\$)
 - (B) Grass → Rabbit → Snake → Hawk.
- 3 (A) 1. flower 2. Oxygen 3. small fish.
 - (B) 1. Melting 2. Evaporation

Sohag Governorate

- 15 Science Inspectorate
- 1 (A) 1. a 2. d 3. a 4. c
 - (B) Because they help the plant to absorb water and nutrients from the soil.
- 2 (A) 1. food web. 2. circulatory 3. evaporation 4. gas
 - (B) It will increase.
- 3 (A) 1. (★) 2. (✔) 3. (★) 4. (★) (B) 1. Copper. 2. Steel.